AIR QUALITY ANALYSIS
I-5/SR-56 INTERCHANGE IMPROVEMENT PROJECT

Prepared for:

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4050 Taylor Street
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As agent for the Federal Highway Administration as Federal Lead Agency
pursuant to the National Environmental Policy Act of 1969

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INTRODUCTION

1.1 INTRODUCTION

The California Department of Transportation (Caltrans) proposes to improve the traffic operations along the Interstate 5 (I-5) and State Route 56 (SR-56) corridors between Del Mar Heights Road, Carmel Valley Road, and Carmel County Road. The project, referred to as the I-5/SR-56 Interchange Improvement Project (proposed project), is located within the City of San Diego in San Diego County, east of the City of Del Mar and south of the City of Solana Beach. The project would begin south of Carmel Valley Road along I-5 at post mile (PM) 52.6 and continue to PM 56.0 north of Del Mar Heights Road. Along SR-56, the project would begin at PM 0.0 at El Camino Real and continue to PM 2.5 east of Carmel Country Road. The length of the project is 3.4 miles on I-5 and 2.5 miles on SR-56, for a total length of 5.9 miles. Figure 1 shows the location of the project on a regional map, and Figure 2 provides a vicinity map for the project site.

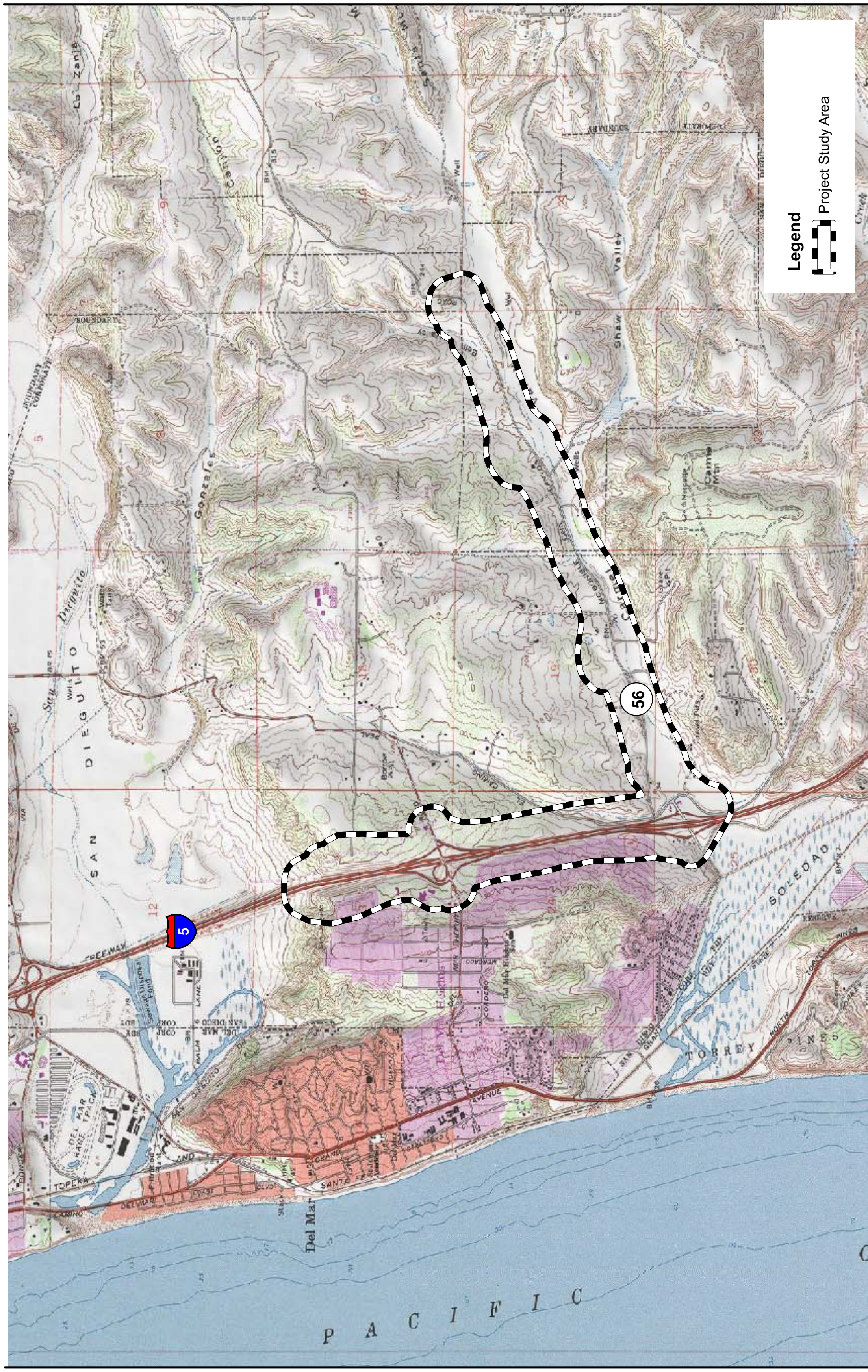
The primary purpose of the proposed project is to maintain or improve the existing and projected future traffic operations along the I-5 and SR-56 corridors between Del Mar Heights Road, Carmel Valley Road, and Carmel Country Road, in order to improve the safe and efficient local and regional movement of people and goods, while minimizing environmental and community impacts for planning design year 2030. The proposed project would include improvements to surface streets, the addition of auxiliary lanes along I-5 and SR-56, interchange improvements, and/or new freeway-to-freeway connector ramps.

The purpose of this air quality analysis is to describe the existing air quality in the project area; identify the applicable federal, state, and local air quality regulations; identify the potential air quality impacts of the proposed project; and demonstrate conformity of the project with the State Implementation Plan (SIP), as required by the federal Clean Air Act (CAA). This report also identifies measures to minimize pollutant emissions that could occur during project construction.

1.2 SUMMARY

The project site is located in the San Diego Air Basin (SDAB), the boundaries of which coincide with those of San Diego County. The San Diego Air Pollution Control District (SDAPCD) is the

Figure 1
Regional Location Map



Source: USGS Topo 7.5' Quad Del Mar 1975

4,000 0 4,000 Feet

Scale: 1:48,000; 1 inch = 4,000 feet

Figure 2
Vicinity Map

regulatory agency in the SDAB responsible for the administration of federal and state air quality laws, regulations, policies, and standards; preparation of plans for the attainment of ambient air quality standards; and operation of air quality monitoring stations throughout the SDAB.

On April 15, 2004, the U.S. Environmental Protection Agency (USEPA) issued the initial designations for the 8-hour ozone standard, and the SDAB is classified as "basic" nonattainment. This designation took effect on June 15, 2004. Basic is the least severe of the six degrees of ozone nonattainment. SDAPCD submitted an air quality plan to USEPA in 2007; the plan demonstrated how the 8-hour ozone standard will be attained by 2009. A decision from USEPA is pending. The SDAB also falls under a federal "maintenance plan" for carbon monoxide (CO) following a 1998 redesignation as a CO attainment area. The SDAB currently meets the federal standards for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead and is classified as an attainment area for these pollutants. Table 1 provides additional details relative to the status of the ozone and CO SIPs.

Table 1. Status of State Implementation Plan in San Diego

Pollutants	Status
Ozone (O_3)	In July 1997, USEPA established a new federal 8-hour standard for ozone of 0.085 parts per million (ppm). USEPA designated 15 areas in California that violate the federal 8-hour ozone standard on April 15, 2004. Each nonattainment area's classification and attainment deadline are based on the severity of its ozone problem. San Diego's nonattainment area deadline is 2009. The San Diego ozone SIP was approved by the California Air Resources Board (CARB) on May 24, 2007, and is awaiting federal approval. Due to a Federal Court decision relative to Subpart 1 ozone nonattainment areas, approval of the SIP will likely be delayed. However, on May 13, 2008, USEPA found the motor vehicle emission budgets included in the SIP adequate for use in transportation conformity analyses. USEPA adequacy determination was announced in the Federal Register on May 23, 2008, and is effective June 7, 2008.
Carbon Monoxide (CO)	On April 26, 1996, CARB approved the "Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas" as part of the SIP for CO. USEPA approved this revision on June 1, 1998, and redesignated San Diego to attainment. On October 22, 1998, CARB revised the SIP to incorporate the effects of the recent CARB action to remove the wintertime oxygen requirement for gasoline in certain areas. On July 22, 2004, CARB approved an update to the SIP that shows how the 10 areas will maintain the standard through 2018, revises emission estimates, and establishes new on-road motor vehicle emission budgets for transportation conformity purposes. The update was approved by USEPA on November 30, 2005, effective January 30, 2006.

Sources: CARB 2009b; USEPA 2008a; Federal Register 2008, SDAPCD 2008a

The SDAB is currently classified as a state “serious” ozone nonattainment area and a state nonattainment area for particulate matter equal to or less than 10 microns in diameter (PM_{10}), and particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$). The SDAB currently meets the state standards for CO, NO_2, SO_2, and lead and is classified as an attainment area for these pollutants (CARB 2009a).

The CAA requires a demonstration that federal actions conform to the SIP and similar approved plans in areas that are designated as nonattainment or maintenance for criteria air pollutants. Transportation measures, such as the proposed project, are analyzed for conformity with the SIP as part of regional transportation plans (RTPs) and regional transportation improvement programs (RTIPs). The RTIP is the implementing document for the RTP.

The Metropolitan Planning Organization (MPO) responsible for the preparation of RTPs and RTIPs and the associated air quality analyses in the project area is the San Diego Association of Governments (SANDAG). The applicable transportation plans for the proposed project are the *2030 San Diego Regional Transportation Plan*: *Pathways for the Future* (2030 RTP), adopted on November 30, 2007 (SANDAG 2007); and the *Final 2008 Regional Transportation Improvement Program*, through Amendment 14 (2008 RTIP). The 2008 RTIP was adopted by SANDAG on July 25, 2008 (SANDAG 2008). The U.S. Department of Transportation (USDOT) made a finding of conformity for the 2008 RTIP and a conformity redetermination for the 2030 RTP on November 17, 2008 (USDOT 2008). The 2008 RTIP has been amended 14 times since the original approval.

The proposed project is included in the current 2030 RTP in the “Freeway Connectors” category (West to North & South to East) (SANDAG 2007). The project is included in the2008 RTIP as MPO ID CAL114 (“At I-5/SR 56 interchange - in San Diego, construct freeway to freeway interchange, associated operational improvements, and the relocation of the fiber optic cable line”) (SANDAG 2008). The design concept and scope of the proposed project are consistent with the project description in the 2030 RTP, the 2008 RTIP, and the assumptions in SANDAG’s regional emissions analysis. Therefore, the project is assumed to conform to the SIP and no adverse regional air quality impact would occur as a result of the project.

Analysis of local CO and PM impacts is required to demonstrate project level conformity. Analysis of CO impacts in accordance with the *Transportation Project-Level Carbon Monoxide Protocol* (the Protocol) (UCD ITS 1997) shows that the project is satisfactory with respect to local CO impacts. According to USEPA’s *Transportation Conformity Guidance for Qualitative*

Hot spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas, dated March 2006, PM impacts from transportation projects are of concern only for projects defined as “projects of air quality concern” (POAQCs) (FHWA 2006a). The proposed project was determined to not be a POAQC, and local PM emissions would be acceptable.

The proposed project was evaluated for potential Mobile Source Air Toxics (MSATs) air quality impacts in accordance with the Federal Highway Administration (FHWA) *Interim Guidance on Air Toxic Analysis for NEPA Documents*, dated February 2006 (FHWA 2006b) and the American Association of State Highway and Transportation Officials (AASHTO) report titled *Analyzing, Documenting, and Communicating the Impacts of Mobile Source Air Toxic Emissions in the NEPA Process*, dated March 2007 (AASHTO 2007). The proposed project would not result in any adverse MSAT impacts.

In addition, a discussion of construction activities, potential impacts, and measures to avoid or minimize the impacts is included in this analysis. These emissions would be temporary and would cease at the completion of construction activities.

1.3 PROJECT DESCRIPTION

The proposed project is located within the City of San Diego in San Diego County, east of the City of Del Mar and south of the City of Solana Beach. I-5 and Interstate I-15 (I-15) are principal north-south arterials for the western United States, linking the Mexican border in the south to the Canadian border to the north. Regionally, I-5 and I-15 serve as commuter links for North San Diego County with significant intraregional, interregional, and international traffic. I-5 connects with SR-56 north of Torrey Pines State Reserve, near the San Diego communities of Carmel Valley and Torrey Pines. The road that becomes SR-56 is officially named Carmel Valley Road west of I-5. East of I-5, SR-56 is also called Ted Williams Parkway.

The primary objectives of the proposed project are to improve the I-5 and Del Mar Heights Road interchange, as well as southbound connections to eastbound SR-56 along I-5, and also to improve the Carmel Country Road interchange and northbound connections to I-5 from SR-56. The project would include improvements to the surface streets, the addition of auxiliary lanes along SR-56 and I-5, interchange improvements, or new freeway-to-freeway connector ramps.

The ultimate goal of the proposed project is to improve the existing and future operations along the I-5 and SR-56 corridors between Del Mar Heights Road, Carmel Valley Road, and Carmel

Country Road, to facilitate the safe and efficient local and regional movement of people and goods, while minimizing environmental and community impacts for the planning design year of 2030. The proposed project would begin south of Carmel Valley Road along I-5 at PM 52.6 and continue to PM 56.0, north of Del Mar Heights Road. Along SR-56, the project would begin at PM 0.0 at El Camino Real and continue to PM 2.5 east of Carmel Country Road.

Residential developments lie to the northwest of the proposed project, leading upslope from the freeway. The northeast quadrant is developed with commercial/residential developments including the commercial business center southeast of Del Mar Heights Road. Residential developments lie to the north and east of the commercial area. The southeastern corridor consists of an undeveloped open space area providing the riparian/wetland habitat along Carmel Valley Creek. Carmel Valley Creek drains the surrounding area into Los Peñasquitos Lagoon. Residential developments lie to the south and southeast of the open area.

Project Alternatives

In addition to the No Build Alternative (Alternative 1), four build alternatives were developed for the proposed project: the Direct Connector Alternative (Alternative 2), the Auxiliary Lane Alternative (Alternative 3), the Hybrid Alternative (Alternative 4), and the Hybrid with Flyover Alternative (Alternative 5). The following discussion summarizes the alternatives under consideration and continued study.

<u>No Build Alternative (Alternative 1)</u>

The No Build Alternative assumes the existing configuration for the I-5/SR-56 interchange with future improvements that are, as part of the proposed I-5 North Coast Project, independent of the I-5/SR-56 Interchange Project. These improvements include the addition of two managed/high occupancy vehicle (HOV) lanes on I-5 (one in each direction), one general-purpose lane along northbound I-5, and improvements to the Del Mar Heights Road interchange. The alternative would not include the construction of direct freeway-to-freeway connectors in the westbound SR-56 to northbound I-5 and southbound I-5 to eastbound SR-56 directions or improvements to local streets in the Carmel Valley area.

Direct Connector Alternative (Alternative 2)

The Direct Connector Alternative proposes the construction of direct freeway-to-freeway connectors in the westbound SR-56 to northbound I-5 and southbound I-5 to eastbound SR-56 directions. The connector ramps would have two general purpose lanes.

This alternative includes the extension of the local bypass in both northbound and southbound directions to the Del Mar Heights Road interchange and the elimination of the eastbound slip off-ramp to Carmel Creek Road. Travelers who want to use the southbound local bypass must access the bypass just south of the Del Mar Heights Road interchange. A concrete barrier would separate the freeway mainline traffic from the local bypass and connector ramps in the northbound and southbound directions. A barrier separated collector/distributor system along westbound SR-56 would separate the westbound to southbound traffic from the westbound to northbound traffic just east of the Carmel Creek interchange. To eliminate weave movement between the drivers traveling on the eastbound connectors and drivers wishing to access Carmel Creek Road, a barrier would be constructed along SR-56 between El Camino Real and Carmel Creek Road. Drivers traveling in those directions would need to use local street alternatives to access Carmel Creek Road.

This alternative also includes an additional auxiliary lane along I-5 between the connector ramps and Del Mar Heights Road and along eastbound SR-56 between Carmel Creek Road and Carmel Country Road. Several local street interchanges would be modified to accommodate the new configuration on and along I-5 and SR-56. Improvements are proposed for the northbound on-ramp and southbound off-ramp at Carmel Valley Road and the eastbound and westbound on-and off-ramps at Carmel Creek Road. Reconstruction of the Del Mar Heights Road overcrossing, widening of the El Camino Real Bridge, and associated operational improvements are proposed within this alternative. Sixteen retaining walls would be constructed for this alternative.

The Direct Connector Alternative uses a combination of design modifications to reduce right-of-way impacts to parcels along Portofino Drive. First, the ramp metering system on the southbound I-5 entrance ramp at Del Mar Heights Road has been shifted to the north and the transition on the ramp from three lanes to one lane has been considerably shortened. These modifications enable a reduction in the overall width of the ramp and a reduction in right-of-way impacts to parcels north of Portofino Drive. Second, the southbound to eastbound connector exit ramp would be located to the southernmost feasible location on I-5. This improvement would enable a reduction in right-of-way impacts to parcels near the intersection of Portofino Drive and Portofino Circle.

Finally, lane widths in the southbound I-5 direction would be reduced enabling further reduction in right-of-way impacts to parcels along Portofino Drive and Portofino Circle.

The Direct Connector Alternative would result in right-of-way impacts on the east and west sides of I-5 but this alternative would provide substantial operational improvements over the No Build Alternative and the Auxiliary Lane Alternative.

Auxiliary Lane Alternative (Alternative 3)

The Auxiliary Lane Alternative proposes the addition of an auxiliary lane between the Del Mar Heights Road and Carmel Valley Road interchanges along southbound I-5 and the addition of a multipurpose lane between Carmel Country Road and I-5 along westbound SR-56. Westbound SR-56 would be widened to the north to accommodate the proposed multipurpose lane and future construction of HOV lanes within the median. Due to this addition, the westbound Carmel Creek Road loop on-ramp and off-ramp and the Carmel Country Road loop on-ramp would be realigned. The eastbound slip off-ramp to Carmel Creek Road would be eliminated in this alternative. Improvements to the Carmel Valley Road interchange, widening of Carmel Valley Road to four lanes east of I-5, improvements to the eastbound El Camino Real on-ramp, and reconstruction of the Del Mar Heights Road overcrossings and associated operational improvements are proposed within this alternative. This alternative includes the construction of seven retaining walls.

The Auxiliary Lane Alternative would have minimal right-of-way impacts throughout the project area but would provide only slight traffic operational improvements over the No Build Alternative.

Hybrid Alternative (Alternative 4)

The Hybrid Alternative is a combination of the Direct Connector Alternative and the Auxiliary Lane Alternative discussed above. In this alternative, the proposed westbound to northbound connect featured in the Direct Connector Alternative would be combined with the proposed southbound to eastbound local street movement featured in the Auxiliary Lane Alternative.

The Hybrid Alternative would provide operational improvements in the westbound and northbound directions but would provide minimal operational improvements in the southbound and eastbound directions.

Hybrid with Flyover Alternative (Alternative 5)

The Hybrid with Flyover alternative is a variation of the Hybrid Alternative. The Hybrid with Flyover Alternative includes a proposed flyover structure that would connect eastbound Carmel Valley Road to the eastbound SR-56 fast lane, in addition to the west SR-56 to north I-5 connector featured as part of the Direct Connector Alternative. The Hybrid with Flyover Alternative would require use of nonstandard lane and shoulder widths along Carmel Valley Road and would require tunneling behind the Carmel Valley Road undercrossing abutments to provide pedestrian/bicycle access.

1.4 SENSITIVE RECEPTORS

Some members of the population are especially sensitive to air pollutant emissions and should be given special consideration when evaluating air quality impacts from projects. These people include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. Structures that house these persons, i.e. schools, hospitals, and nursing homes are defined as sensitive receptors. Recreational land uses such as parks are also considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. Sensitive receptors located along the project corridor are listed in Tables 2 through 6.

Table 2. Schools along the Project Corridor

District	School	Street Address	City	Distance (feet)
Private	Notre Dame Academy	4343 Del Mar Trl	San Diego	791
Del Mar Union School District	Del Mar Hills Academy of Arts and Sciences	14085 Mango Drive	Del Mar	857
Del Mar Union School District	Carmel Del Mar School	12345 Carmel Park Dr	San Diego	898
Solana Beach School District	Solana Highlands Elementary	3520 Long Run Dr	San Diego	1219
San Dieguito Union High School District	Canyon Crest Academy	5951 E Village Center Loop Rd	San Diego	1350
Del Mar Union School District	Del Mar Heights Elementary	13555 Boquita Dr	Del Mar	1960
Del Mar Union School District	Sycamore Ridge School	5333 Carmel Valley Rd	San Diego	2014
Private	Del Mar Montessori School	13941 Durango Dr	Del Mar	2610
Del Mar Union School District	Ashley Falls School	13030 Ashley Falls Dr	San Diego	2933
Private	Cathedral Catholic High School	5555 Del Mar Heights Rd	San Diego	3037
San Dieguito Union High School District	Carmel Valley Middle School	3800 Mykonos Ln	San Diego	3166

Table 3. Hospitals along the Project Corridor

Hospital	Street Address	City	Distance (feet)
Scripps Memorial Hospital	3811 Valley Centre Dr	San Diego	122
UCSD Medical Center	12395 El Camino Real	San Diego	883

Table 4. Nursing Homes along the Project Corridor

Nursing Home Name	Capacity	Street Address	City	Distance (feet)
Brighton Gardens-Carmel Valley	45	13101 Hartfield Ave	San Diego	4690

Table 5. Parks along the Project Corridor

Park Name	Distance (feet)
Carmel Del Mar Park	30
Solano Highlands Park	119
Del Mar Trails Park	358
Carmel Creek Park	3622
Torrey Highlands Park	3779

Table 6. Preschools along the Project Corridor

Preschool Name	Capacity	Street Address	City	Distance (ft)
Miss Lynda's Pre Preschool	12	4019 Santa Nella Pl	San Diego	1077
Beth Montessori (Carmel Valley Campus)	60	11860 Carmel Creek Rd	San Diego	1128
Bright Horizons Family Solutions	151	3720 Arroyo Sorrento Rd	San Diego	1271
Del Mar Hills Nursery School	60	13692 Mango Drive	Del Mar	1320
Torrey Pines Montessori Preschool	12	2586 Carmel Valley Rd	Del Mar	1889
Kinder Care Learning Center	140	3790 Townsgate Dr	San Diego	3017

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CHAPTER 2.0
AIR POLLUTANTS

"Air Pollution" is a general term that refers to the presence of one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants may adversely affect human or animal health, reduce visibility, damage property, and reduce the productivity or vigor of crops and natural vegetation.

Concentrations of the following air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$, and lead are used as indicators of ambient air quality conditions. These air pollutants are commonly referred to as "criteria air pollutants" because USEPA regulates them by developing human health-based and/or environmentally-based criteria (science-based guidelines) for setting permissible levels. These air pollutants are the most prevalent air pollutants known to be deleterious to human health, and there is extensive documentation available on health effects of these pollutants.

A brief description of each criteria air pollutant, including source types and health effects is provided below.

In addition to criteria air pollutants, toxic air contaminants (TACs) and asbestos are air pollutants of concern.

2.1 CARBON MONOXIDE

CO is a colorless, odorless gas that is formed when carbon in fuel is not burned completely. It is a component of motor vehicle exhaust, which contributes about 56 percent of all CO emissions nationwide. Other nonroad engines and vehicles (such as construction equipment and boats) contribute about 22 percent of all CO emissions nationwide. Higher levels of CO generally occur in areas with heavy traffic congestion. In cities, 85 to 95 percent of all CO emissions may come from motor vehicle exhaust. Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires. Woodstoves, gas stoves, cigarette smoke, and unvented gas and kerosene space heaters are sources of CO indoors. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent. The air pollution becomes trapped near the ground beneath a layer of warm air (USEPA 2008b).

CO enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells. However, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases (USEPA 2008b).

The highest concentrations are generally associated with cold, stagnant weather conditions that occur during the winter. In contrast to problems caused by ozone, which tends to be a regional pollutant, CO problems tend to be localized. Overall, CO emissions are decreasing as a result of the Federal Motor Vehicle Control Program,

2.2 OZONE

Ozone is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight. Ozone is the primary component of smog. Ozone is not directly emitted into the air but is formed through complex chemical reactions between precursor emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X) in the presence of sunlight. ROG are volatile organic compounds (VOC) that are photochemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. It should be noted that the ROG designation includes more chemical compounds; for purposes of this analysis, the terms ROG and VOC are equivalent and are used interchangeably. NO_X are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. A highly reactive molecule, ozone readily combines with many different components of the atmosphere. Consequently, high levels of ozone tend to exist only while high ROG and NO_X levels are present to sustain the ozone formation process. Once the precursors have been depleted, ozone levels rapidly decline. Because these reactions occur on a regional scale, ozone is a regional pollutant.

Ozone located in the upper atmosphere (stratosphere) acts in a beneficial manner by shielding the earth from harmful ultraviolet radiation that is emitted by the sun. However, ozone located in the lower atmosphere (troposphere) is a major health and environmental concern. Meteorology and terrain play a major role in ozone formation. Generally, low wind speeds or stagnant air coupled with warm temperatures and clear skies provides the optimum conditions for ozone formation. As a result, summer is generally the peak ozone season. Because of the reaction time involved, peak ozone concentrations often occur far downwind of the precursor emissions. In general, ozone concentrations over or near urban and rural areas reflect an interplay of emissions of ozone precursors, transport, meteorology, and atmospheric chemistry (Godish 2004).

The adverse health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 ppm for 1 to 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes (the amount of air inhaled and exhaled), and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses including throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in permeability of respiratory epithelia; such increased permeability leads to an increased response of the respiratory system to challenges, and a decrease in the immune system's ability to defend against infection (Godish 2004).

2.3 NITROGEN DIOXIDE

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2 (USEPA 2008b). The combined emissions of NO and NO_2 are referred to as NO_X and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with ozone, the NO_2 concentration in a particular geographical area may not be representative of the local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions (USEPA 2008b).

2.4 SULFUR DIOXIDE

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, and pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 ppm or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

2.5 LEAD

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, as discussed in detail below, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, USEPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. USEPA banned the use of leaded gasoline in highway vehicles in December 1995 (USEPA 2008b).

As a result of USEPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector have declined dramatically (95 percent between 1980 and 1999), and levels of lead in the air decreased by 94 percent between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13 percent of lead emissions. A National Health and Nutrition Examination Survey reported a 78 percent decrease in the levels of lead in people's blood between 1976 and 1991. This dramatic decline can be attributed to the move from leaded to unleaded gasoline (USEPA 2008b).

2.6 PARTICULATE MATTER

Respirable particulate matter with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. PM_{10} consists of particulate matter emitted directly into the air, such as fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG (USEPA 2008b). $PM_{2.5}$ is a subgroup of PM_{10}, consisting of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less (CARB 2008a).

The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulate matter (referred to as the "piggybacking effect"), or with fine dust particles of silica or asbestos. Generally, adverse health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death (USEPA 2008b). $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and may contain substances that are particularly harmful to human health.

The criteria pollutants that are most important for this air quality impact analysis are those that can be traced principally to motor vehicles and to earth-moving activities. Of these pollutants, CO, ROG, NO_X, $PM_{2.5}$, and PM_{10} are evaluated on a regional or "mesoscale" basis. CO is also often analyzed on a localized or "microscale" basis in cases of congested traffic conditions. FHWA and USEPA released joint guidance for conducting qualitative analyses to evaluate microscale impacts of $PM_{2.5}$ and PM_{10} in March 2006 (FHWA 2006a). FHWA and USEPA are currently developing methods and modeling procedures for developing quantitative $PM_{2.5}$ and PM_{10} assessments; however, at the date of this report no quantitative guidance has been issued by either agency.

2.7 TOXIC AIR CONTAMINANTS

Concentrations of TACs, or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no threshold level below which adverse health impacts may not be expected to occur. This is in contrast with the criteria air pollutants for which acceptable levels of exposure can be determined and for which ambient standards have been established (see Table 7 in Section 3.1). Most TACs originate from human-made sources, including on-road mobile sources, nonroad mobile sources (e.g., railroads and airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics

The CAA identified 188 compounds as TACs. USEPA has assessed this expansive list of toxics and identified a group of 21 as MSATs. The MSATs are compounds emitted from highway vehicles and nonroad equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. USEPA also extracted a subset of this list of 21 compounds that it now labels as the six priority MSATs. These are benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. While these MSATs are considered the priority transportation toxics, USEPA stresses that the lists are subject to change and may be adjusted in future rules (FHWA 2006b).

USEPA has issued a number of regulations that will dramatically decrease MSATs through cleaner fuels and cleaner engines. According to an FHWA analysis, even if the number of vehicle miles traveled increases by 64 percent, reductions of 57 percent to 87 percent in MSATs are projected from 2000 to 2020. Project MSAT impacts are discussed in Section 5.1 of this report.

Diesel Exhaust Particulate

According to the *California Almanac of Emissions and Air Quality* (CARB 2008a), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being PM from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. CARB identified diesel PM as a TAC in 1998.

Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs. Based on receptor modeling techniques, CARB estimated the diesel PM health risk in the SDAB in 2000 to be 420 excess cancer cases per million people. Since 1990, the health risk of diesel PM in the SDAB has been reduced by 52 percent (CARB 2008a).

2.8 ASBESTOS

The CAA requires USEPA to develop and enforce regulations to protect the general public from exposure to airborne contaminants that are known to be hazardous to human health. In accordance with CAA Section 112, USEPA established National Emissions Standards for Hazardous Air Pollutants (NESHAP) to protect the public. Asbestos was one of the first HAPs regulated under this section. On March 31, 1971, USEPA identified asbestos as a hazardous pollutant, and on April 6, 1973, first promulgated the asbestos NESHAP in 40 CFR 61. In 1990, a revised NESHAP regulation was promulgated by USEPA.

The asbestos NESHAP regulations protect the public by minimizing the release of asbestos fibers during activities involving the processing, handling, and disposal of asbestos-containing material. Accordingly, the asbestos NESHAP specifies work practices to be followed during demolitions and renovations of all structures, installations, and buildings (excluding residential buildings that have four or fewer dwelling units). In addition, the regulations require the project applicant to notify applicable state and local agencies and/or USEPA regional offices before all demolitions or before construction that contains a certain threshold amount of asbestos.

Naturally Occurring Asbestos (NOA)-bearing Serpentine

Serpentine is a mineral commonly found in seismically active regions of California, usually in association with ultramafic rocks and along associated faults. Certain types of serpentine occur naturally in a fibrous form known generically as asbestos. Asbestos is a known carcinogen and inhalation of asbestos may result in the development of lung cancer or mesothelioma. CARB has regulated the amount of asbestos in crushed serpentinite used in surfacing applications, such as for gravel on unpaved roads, since 1990. In 1998, new concerns were raised about health hazards from activities that disturb asbestos-bearing rocks and soil. In response, CARB revised their asbestos limit for crushed serpentines and ultramafic rock in surfacing applications from 5 percent to less than 0.25 percent and adopted a new rule requiring best practices dust control measures for activities that disturb rock and soil containing NOA (CDC 2000).

According to *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (CDC 2000), the project site is not located in an area that is likely to contain NOA. Thus, hazardous exposure to asbestos-containing serpentine materials would not be a concern with the proposed project.

CHAPTER 3.0
APPLICABLE STANDARDS

3.1 FEDERAL AND STATE STANDARDS

At the federal level, USEPA has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the CAA, which was enacted in 1970. The most recent major amendments made by Congress were in 1990.

The CAA required USEPA to establish National Ambient Air Quality Standards (NAAQS). As shown in Table 7, USEPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. The primary standards protect the public health and the secondary standards protect public welfare. The CAA also required each state to prepare an air quality control plan referred to as a SIP. The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. USEPA must review all state SIPs to determine whether they conform to the mandates of the CAA and the amendments thereof, and to determine whether implementing them will achieve air quality goals.

CARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish California Ambient Air Quality Standards (CAAQS) (Table 7). CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained through interpretation of the health effects studies considered during the standard-setting process. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals. Federal and state standards are shown in Table 7.

Table 7. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS[1] Primary[3]	NAAQS[1] Secondary[4]	CAAQS[2] Concentration[5]
Ozone (O_3)[6]	1-Hour	-	Same as Primary Standard	0.09 ppm (180 $\mu g/m^3$)
	8-Hour	0.075 ppm (147 $\mu g/m^3$)		0.070 ppm (137 $\mu g/m^3$) [9]
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	None	9.0 ppm (10 mg/m^3)
	1-Hour	35 ppm (40 mg/m^3)		20 ppm (23 mg/m^3)
	8-Hour (Lake Tahoe)	-	-	6 ppm (7 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual Average	0.053 ppm (100 $\mu g/m^3$)	Same as Primary Standard	0.030 ppm (57 $\mu g/m^3$)[10]
	1-Hour	-		0.18 ppm (339 $\mu g/m^3$)[10]
Sulfur Dioxide (SO_2)	Annual Average	0.030 ppm (80 $\mu g/m^3$)	-	-
	24-Hour	0.14 ppm (365 $\mu g/m^3$)	-	0.04 ppm (105 $\mu g/m^3$)
	3-Hour	-	0.5 ppm (1300 $\mu g/m^3$)	-
	1-Hour	-	-	0.25 ppm (655 $\mu g/m^3$)
Respirable Particulate Matter (PM_{10})[7]	24-Hour	150 $\mu g/m^3$	Same as Primary Standard	50 $\mu g/m^3$
	Annual Arithmetic Mean	Revoked		20 $\mu g/m^3$ note 7
Fine Particulate Matter ($PM_{2.5}$)[8]	24-Hour	35 $\mu g/m^3$	Same as Primary Standard	-
	Annual Arithmetic Mean	15 $\mu g/m^3$		12 $\mu g/m^3$
Lead (Pb)	30-Day Average	-	-	1.5 $\mu g/m^3$
	Calendar Quarter	1.5 $\mu g/m^3$	Same as Primary Standard	-
	Rolling 3-Month Average	0.15 $\mu g/m^3$	Same as Primary Standard	-
Hydrogen Sulfide (H_2S)	1-Hour	No Federal Standards		0.03 ppm (42 $\mu g/m^3$)
Sulfates (SO_4)	24-Hour			25 $\mu g/m^3$
Visibility Reducing Particles	8-Hour (10 am to 6 pm, Pacific Standard Time)			Extinction coefficient of 0.23 per km-visibility of ten miles or more (0.07/30 miles for Lake Tahoe) due to particles when the relative humidity is less than 70 percent.
Vinyl chloride[9]	24-Hour			0.01 ppm (26 $\mu g/m^3$)

1 NAAQS (other than O_3, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact USEPA for further clarification and current federal policies.

2 California Ambient Air Quality Standards for O_3, CO (except Lake Tahoe), SO_2 (1- and 24-hour), NO_2, PM_{10}, $PM_{2.5}$ and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded.

3 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.

4 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

5 Concentration expressed first in units in which it was promulgated. Ppm in this table refers to ppm by volume or micromoles of pollutant per mole of gas.

6 On June 15, 2005, the 1-hour ozone standard was revoked for all areas except the 8-hour ozone nonattainment Early Action Compact Areas (those areas do not yet have an effective date for their 8-hour designations). Additional information on federal ozone standards is available at http://www.epa.gov/oar/oaqps/greenbk/index.html.

7 Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, USEPA revoked the annual PM_{10} standard on December 17, 2006.

8 Effective December 17, 2006, USEPA lowered the $PM_{2.5}$ 24-hour standard from 65 $\mu g/m^3$ to 35 $\mu g/m^3$.

9 CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

10 The nitrogen dioxide ambient air quality standard was amended to lower the 1-hr standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes became effective March 20, 2008.

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; km = kilometers
Source: CARB 2008b

3.2 CONFORMITY OF FEDERAL ACTIONS

Background

Section 176(c) of the CAA requires that:

> No department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve, any activity which does not conform to an implementation plan after it has been approved.

Conformity to an implementation plan means:

> A. Conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and
>
> B. that such activities will not:
>
> i. cause or contribute to any new violation of any standard in any area;
> ii. increase the frequency or severity of any existing violation of any standard in any area; or
> iii. delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.
>
> The determination of conformity shall be based on the most recent estimates of emissions, and such estimates shall be determined from the most recent population, employment, travel and congestion estimates as determined by the metropolitan planning organization or other agency authorized to make such estimates.

In November 1993, USDOT and USEPA developed guidance for determining conformity of transportation plans, programs, and projects. This guidance is denoted as the Transportation Conformity Rule (40 CFR §§ 51.390 and 40 CFR §§ 93.100-129).

A significant revision to the CAA in 1997 established new ambient air quality standards for 8-hour ozone and $PM_{2.5}$. Legal challenges to the new standards delayed implementation relative to transportation until 2004. On July 1, 2004, USEPA promulgated revisions to the transportation conformity rule to include criteria and procedures for the new 8-hour ozone and $PM_{2.5}$ NAAQS (Federal Register 2004). The action did not finalize new transportation conformity requirements for $PM_{2.5}$ precursors and $PM_{2.5}$ hot spot analyses, or make changes to existing PM_{10} hot spot analysis requirements. Subsequent rulemakings have developed current procedures for these particulate analyses. One of the more recent rules was promulgated in March 2006 and is discussed in the $PM_{2.5}$ analysis section of this report.

Project Conformity

The MPO responsible for the preparation of RTPs and RTIPs and the associated air quality analyses in the project area is the San Diego Association of Governments (SANDAG). The applicable transportation plans for the proposed project are the *2030 San Diego Regional Transportation Plan*: *Pathways for the Future* (2030 RTP), adopted on November 30, 2007 (SANDAG 2007); and the *Final 2008 Regional Transportation Improvement Program*, through Amendment 14 (2008 RTIP). The 2008 RTIP was adopted by SANDAG on July 25, 2008 (SANDAG 2008). USDOT made a finding of conformity for the 2008 RTIP and a conformity redetermination for the 2030 RTP on November 17, 2008 (USDOT 2008). The 2008 RTIP has been amended 14 times since the original approval. The amendments did not address or change the proposed project. Detailed information on the RTP and RTIP is included in Section 5.1 of this report.

The proposed project is included in the current 2030 RTP in the “Freeway Connectors” category (West to North & South to East) (SANDAG 2007). The project is included in the 2008 RTIP as MPO ID CAL114 (“At I-5/SR 56 interchange - in San Diego, construct freeway to freeway interchange, associated operational improvements, and the relocation of the fiber optic cable line”) (SANDAG 2008). The design concept and scope of the proposed project are consistent with the project description in the 2030 RTP, the 2008 RTIP, and the assumptions in SANDAG’s regional emissions analysis. Therefore, the project is assumed to conform to the SIP and no adverse regional air quality impact would occur as a result of the project.

3.3 REGIONAL AUTHORITY

SDAPCD works to improve air quality conditions in the SDAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of SDAPCD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. SDAPCD also inspects stationary sources of air pollution and responds to citizen complaints; monitors ambient air quality and meteorological conditions; and implements programs and regulations required by the CAA, CAAA, and the CCAA.

SDAPCD is responsible for preparation of the SIP for the SDAB. The SIP includes strategies and tactics to be used to attain the federal ozone standard in the county. The SIP elements are taken from the Regional Air Quality Strategy (RAQS), the SDAPCD plan for attaining the state ozone standard. The state standard for ozone is more stringent than the federal standard.

SDAPCD Rules and Regulations

As mentioned above, SDAPCD adopts rules and regulations. All projects are subject to SDAPCD rules and regulations in effect at the time of construction. A specific rule applicable to the construction of the proposed project is:

- Rule 51, Nuisance, states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health or safety of any such persons or the public; or which cause or have a natural tendency to cause injury or damage to business or property.

SDAPCD has not adopted quantitative emissions limits for construction activities and long-term emissions that may result from increased vehicle use.

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CHAPTER 4.0
EXISTING CONDITIONS

4.1 ENVIRONMENTAL SETTING, CLIMATE, AND METEOROLOGY

Air quality is affected by both the rate and location of pollutant emissions and by meteorological conditions that influence movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality.

The project site is located in the City of San Diego, which is within the SDAB. The boundaries of the SDAB coincide with that of the county. Ambient concentrations of air pollutants in the SDAB are determined by the amount of emissions released by pollutant sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and the presence of sunlight. Therefore, existing air quality conditions in the area are determined by natural factors such as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

The climate of the SDAB is characterized by warm, dry summers and mild, wet winters. One of the main determinants of the climatology is a semipermanent high-pressure area (the Pacific High) in the eastern Pacific Ocean. The Pacific High is located well to the north in the summer, causing storm tracks to be directed north of California. This high-pressure cell maintains clear skies for much of the year. When the Pacific High moves southward during the winter, this pattern changes, and low-pressure storms are brought into the region, causing widespread precipitation. In San Diego County, the months of heaviest precipitation are November through April, averaging about 9 to 14 inches annually. The mean temperature is 62.2 degrees Fahrenheit (°F), and the mean maximum and mean minimum temperatures are 75.7°F and 48.5°F, respectively.

The Pacific High also influences the wind patterns of California. The predominant wind directions are westerly and west-southwesterly during all four seasons, and the average annual wind speed is 5.6 miles per hour (mph).

An inversion layer, which is a layer of warm air that lies over cooler, ocean-modified air, often acts as a lid, preventing air pollutants from escaping upward. In the summer, these temperature inversions are stronger than in winter and prevent pollutants from escaping upward and dispersing. In the winter, a ground-level or surface inversion commonly forms during the night and traps CO emitted by vehicles during the morning rush hours. Inversion layers are important elements of local air quality because they inhibit the dispersion of pollutants, thus resulting in a temporary degradation of air quality.

4.2 REGIONAL AND LOCAL AIR QUALITY

Criteria air pollutant concentrations are measured at 10 monitoring stations in the SDAB. Data from the Beardsley Street monitoring station, located approximately 20 miles south of the project site is used to characterize ambient air quality in the project area. Table 8 summarizes the air quality data for the most recent 3 years.

Both CARB and USEPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. If an area is redesignated from nonattainment to attainment, the CAA requires a revision to the SIP, called a maintenance plan, to demonstrate how the air quality standard will be maintained for 10 years. The Transportation Conformity Rule, 51 CFR 390-464, classifies an area required to develop a maintenance plan as a maintenance area. Table 9 lists the current attainment status of each criteria pollutant in the SDAB.

4.3 ROADWAYS AND TRAFFIC

The primary roadways within the project area are I-5 and SR-56. I-5 is a principal north-south Interstate Freeway facility and has been currently planned to accommodate five lanes plus two HOV lanes in each direction by the year 2030. Currently, the northbound bypass facility is in place and consists of four lanes south of the I-5/SR-56 interchange. The southbound bypass opened to traffic on April 2, 2007 and consists of four lanes south of the I-5/SR-56 interchange, with two lanes leading to I-5 and two lanes leading to the Interstate 805 (I-805) south of the split. The project area includes four interchanges on I-5 – Via De La Valle, Del Mar Heights Road, Carmel Valley Road, and Carmel Mountain Road. SR-56 is a four-lane State Route east-west interregional freeway facility connecting I-5 to I-15. The project area includes four interchanges on SR-56 – El Camino Real, Carmel Creek Road, Carmel Country Road, and Carmel Valley Road (also known as Camino Santa Fe) (LLG 2009).

Table 8. Ambient Air Quality Monitoring Data – San Diego

Pollutant Standards	2006	2007	2008
Ozone (O_3)			
Maximum 1-hour concentration (ppm)	0.082	0.087	0.087
Maximum 8-hour concentration (ppm)	0.070	0.072	0.073
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	0	0	0
CAAQS 8-hour (>0.070 ppm)	1	1	1
NAAQS 8-hour (>0.075 ppm)	0	0	0
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	3.27	3.01	2.60
Maximum 1-hour concentration (ppm)	5.3	4.4	*
Number of Days Standard Exceeded			
NAAQS 8-hour (≥9.0 ppm)	0	0	0
CAAQS 8-hour (≥9.0 ppm)	0	0	0
NAAQS 1-hour (≥35 ppm)	0	0	0
CAAQS 1-hour (≥20 ppm)	0	0	0
Nitrogen Dioxide (NO_2)			
Maximum 1-hour concentration (ppm)	0.094	0.098	0.091
Annual average concentration (ppm)	0.021	0.018	0.019
Number of Days Standard Exceeded			
CAAQS 1-hour (≥ 0.18 ppm)	0	0	0
Particulate Matter (PM_{10})[a]			
National maximum 24-hour concentration (μg/m^3)[b]	71.0	110.0	58.0
State maximum 24-hour concentration (μg/m^3)[b]	74.0	111.0	59.0
State annual average concentration (μg/m^3)[b]	34.4[c]	31.3[c]	29.3[c]
Number of Days Above Standard			
NAAQS 24-hour (>150 μg/m^3)	0	0	0
CAAQS 24-hour (>50 μg/m^3)	11	4	4
Particulate Matter ($PM_{2.5}$)[a]			
National maximum 24-hour concentration (μg/m^3)[b]	63.3	69.6	42.0
State maximum 24-hour concentration (μg/m^3)[b]	63.3	71.4	42.0
National annual average concentration (μg/m^3)[b]	13.1[d]	12.7[d]	13.7[d]
State annual average concentration (μg/m^3)[b]	13.1[d]	11.7	10.7
Number of Days Above Standard			
NAAQS 24-hour (>65/>35 μg/m^3)[e]	2	8	3

ppm – parts per million; μg/m^3 – micrograms per cubic meter
CAAQS = California Ambient Air Quality Standards
NAAQS = National Ambient Air Quality Standards

[a] Measurements collected every 6 days.
[b] State and national statistics may differ for the following reasons: State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers. State statistics are based on *local* conditions National statistics are based on *standard* conditions. State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
[c] Exceeded CAAQS annual standard of 20 μg/m^3.
[d] Exceeded CAAQS annual standard of 12 μg/m^3.
[e] NAAQS 24-hour standard was reduced effective December 2006.
*Insufficient data to determine the value.

Source: CARB 2008c; SDAPCD 2008b

Table 9. Attainment Status for the SDAB

Pollutant	Attainment Status	
	Federal	State
Ozone – 1-Hour	--[a]	Nonattainment Serious
Ozone – 8-hour	Nonattainment Basic	
PM_{10}	Attainment	Nonattainment
$PM_{2.5}$	Attainment	Nonattainment
CO	Attainment - Maintenance[b]	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment

[a] Repealed by law in June 2005.
[b] Redesignation to attainment by USEPA occurred in 1998.
Sources: USEPA 2009; CARB 2009a

CHAPTER 5.0
FUTURE AIR QUALITY AND IMPACTS

5.1 OPERATIONAL EMISSIONS

The project is in a federal nonattainment area for ozone and is not exempt from transportation conformity requirements. The Transportation Conformity Rule requires that conformity of the RTP and the RTIP for nonattainment areas be determined. The MPO for the proposed project is SANDAG.

Regional Air Quality

The CAA requires a demonstration that federal actions conform to the SIP and similar approved plans in areas that are designated as nonattainment. Transportation measures, such as the proposed project, are analyzed for conformity as part of the RTP and RTIP. The RTIP is the implementing document for the RTP. If the design concept and scope of a proposed transportation project are consistent with the project description in the applicable RTP and RTIP, and the assumptions in the regional emissions analysis for the RTP and RTIP, then the proposed project would conform to the SIP, and no adverse regional air quality impact would occur as a result of the project.

Both plans, and an air quality analysis of the RTIP, were prepared by SANDAG. The proposed project is included on Page A-6 of Appendix A to the *2030 San Diego Regional Transportation Plan*: *Pathways for the Future* (SANDAG 2007). The project's design concept and scope are consistent with the project description in the 2030 RTP (2007 update). The 2030 RTP was adopted by SANDAG on November 30, 2007. USDOT adopted a CAA conformity redetermination for the 2030 RTP on November 17, 2008 (USDOT 2008).

The proposed project is included in the *Final 2008 Regional Transportation Improvement Program* on Page 13 (41), as MPO ID CAL114 and RTIP # 08-00 ("At I-5/SR 56 interchange - in San Diego, construct freeway to freeway interchange, associated operational improvements, and the relocation of the fiber optic cable line") (SANDAG 2008). The project Capacity Status is "CI" (Capacity Increasing). The RTIP was approved by the federal agencies on November 17, 2008, and USDOT adopted a CAA conformity determination for the RTIP on that date (USDOT 2008).

The 2008 RTIP has been amended 14 times since the original approval. FHWA issued a positive conformity finding for Amendment 1 on January 13, 2009. Amendments 2 and 5 were approved at the state level on February 13, 2009 and February 23, 2009, respectively. FHWA issued the conformity determination for Amendments 2 and 5 on March 2, 2009. Amendments 3, 4, and 6 through 9 are administrative amendments that do not require federal approval, and have been approved at the state level. Amendment 10 was approved at the state level on May 19, 2009, and received the FHWA positive conformity determination on June 9, 2009. Amendments 11 and 12 were approved at the state level on May 8, 2009, and May 12, 2009, respectively. FHWA issued the conformity determination for Amendments 11 and 12 on May 19, 2009. Amendment 13 received state approval on August 3, 2009 and a positive conformity finding at the federal level on August 17, 2009. Amendment 14 was approved at the state level on June 30, 2009 and did not require federal approval, being an administrative amendment. None of these amendments changed the scope or description of the proposed project (SANDAG 2009).

Chapter 5 of the 2008 RTIP summarizes the air quality conformity determinations made for the RTIP, including showing consistency with the 2030 RTP; satisfactory findings for emissions of ozone precursors and CO for the SDAB; and compliance with Transportation Control Measures, Financial Constraint, and Interagency Consultation and Public Involvement Tests. These are the requirements for a transportation program to demonstrate conformity with the CAA.

The proposed project is consistent with the description included in the 2030 RTP, 2008 RTIP, and the assumptions in SANDAG's regional emissions analysis. Therefore, it may be concluded that the regional emissions of the proposed project conform to the RTIP and RTP.

Local Air Quality

The Transportation Conformity Rule requires a statement that:

> Federal projects must not cause or contribute to any new localized CO, PM_{10}, and/or $PM_{2.5}$ violations or increase the frequency or severity of any existing CO, PM_{10}, and/or $PM_{2.5}$ violations in CO, PM_{10}, and $PM_{2.5}$ nonattainment and maintenance areas.

The CO requirement applies to the proposed project since the project site is in a federal CO maintenance area. The air quality analyses for projects included in the RTP and RTIP do not include the analyses of local CO impacts; these must be addressed at the project level.

Carbon Monoxide

The *Transportation Project-Level Carbon Monoxide Protocol, UCD-ITS-97-21* (the Protocol) provides procedures and guidelines for use by agencies to evaluate the potential localized CO impacts of a transportation project (UCD ITS 1997). The Protocol provides decision flow charts designed to assist the lead agency in evaluating requirements that specifically apply to a proposed project. An examination of each flow chart inquiry as it pertains to the proposed project is provided below. The CO Protocol states that the determination of project-level CO impacts should be carried out in accordance with the Local CO Analysis flow charts shown as Figures 1 and 3 of the Protocol. Figure 1 of the Protocol applies to the evaluation of *new projects*.

The procedures of Figure 1 of the Protocol are provided for the proposed project to determine the level of analysis (if any):

3.1.1: Is the project exempt from all emissions analyses?

No. The proposed project is not exempt from all emission analyses as it does not meet the criteria for projects exempt from all emissions analyses listed in the Protocol. Go to Question 3.1.2.

3.1.2: Is the project exempt from regional emissions analyses?

No. The proposed project is not exempt from regional emission analyses as it does not meet the criteria for projects exempt from regional emission analyses listed in the Protocol. Go to Question 3.1.3.

3.1.3: Is the project locally defined as regionally significant?

Yes. Regionally significant projects are defined in 40 CFR 93.101 as projects that would normally be included in the modeling of a metropolitan area's transportation network, which is the case for this project. Go to Question 3.1.4.

3.1.4: Is the project in a federal attainment area?

No. The SDAB is designated as a "basic" federal nonattainment area for ozone. Go to Question 3.1.5.

3.1.5: Is there a currently conforming RTP and RTIP?

Yes. The project is included in SANDAG's 2030 RTP and 2008 RTIP; FHWA and FTA approved the air quality conformity analysis for the two documents. Go to Question 3.1.6.

3.1.6: Is the project included in the regional emissions analysis supporting the currently conforming RTP and RTIP?

Yes. The project is consistent with the assumptions in SANDAG's regional emissions analysis. Go to Question 3.1.7

3.1.7 Has project design concept and/or scope changed significantly from that in the regional analysis?

No. Project design concept and scope have not changed from those of the assumptions in SANDAG's regional emissions analysis for the 2030 RTP and the 2008 RTIP. Proceed to Step 3.1.9, Examine Local Impacts; Proceed to Section 4 in Figure 3 of the Protocol.

The determination of project-level CO impacts should be carried out according to the Local Analysis flow chart – Figure 3 of the CO Protocol. The procedures of Section 4 in Figure 3 of the Protocol are provided for the proposed project to identify level of effort.

<u>Section 4, Local CO Analysis, Level 1</u>

Is the project in a CO nonattainment area?

No, the SDAB is a federal attainment area for CO, as shown in Table 9 of this report. Go to next question.

Was the area redesignated as "attainment" after the 1990 Clean Air Act?

Yes, the SDAB was redesignated as attainment in 1998.

Has "continued attainment" been verified with the local Air District (if appropriate)?

Yes. CARB's "2004 Revision to the California State Implementation Plan for Carbon Monoxide" demonstrates continued attainment of the CO standard in 10 areas including the SDAB. Go to Level 7.

<u>Level 7</u>

Does the project worsen air quality?

The guidance for this question states: "Only those projects that are likely to worsen air quality necessitate further analysis." To determine whether a project is likely to worsen air quality for the area substantially affected by the project, the guidance asks the following questions:

Would "the project significantly increase the percentage of vehicles operating in cold start mode"? An increase of as little as 2% should be considered significant.

The proposed project does not involve development of housing, employment centers, or other attractions and thus would not generate traffic but would facilitate improved traffic operations along the I-5 and SR-56 corridors. Therefore, it is presumed that the project itself would not measurably increase traffic volume or the percentage of vehicles in cold start mode.

Would "the project significantly increase traffic volumes?" Increases in traffic volumes in excess of 5% or more should be considered potentially significant. Additionally, an increase of less than 5% may still be potentially significant, if there is also a reduction in average speeds.

The project would not increase overall traffic volumes; rather it would serve to relieve congestion from local and regional traffic.

Would "the project worsen traffic flow"? A reduction in average speeds of 3 to 50 mph or an increase in average delay at an intersection should be regarded as worsening traffic flow.

Yes, a number of project intersections are anticipated to operate at level of service (LOS) E or F in the years 2015 and 2030. In particular, five of these intersections are anticipated to operate at a worse LOS and/or higher average delay under the build alternatives in comparison to the No Build Alternative (LLG 2009). A summary of the projected LOS and delay at these intersections is shown in Table 10. While other intersections would operate at LOS E or F, they would operate more efficiently with the proposed project than without, i.e., improved LOS and/or lower delay time than the No Build Alternative. However, the project is expected to worsen traffic flow at the intersections identified in Table 10 and has the potential to worsen localized air quality. Appendix A contains the complete list of project intersections, LOS, and delay times.

According to the Protocol, the project could worsen air quality and further analysis of localized CO impacts is warranted.

Table 10. Existing, 2015 and 2030 Intersection Operations

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
I-5 Northbound Ramps/Carmel Valley Road	Existing	33.5	C	58.6	E	33.5	C	58.6	E
	Alternative 1: No Build	49.8	D	61.7	E	59.7	E	69.5	E
	Alternative 2: Direct Connector	41.1	D	47.0	D	61.8	E	69.7	E
	Alternative 3: Auxiliary Lane	82.0	F	98.0	F	90.4	F	145.8	F
	Alternative 4: Hybrid	56.9	E	64.9	E	96.9	F	148.9	F
	Alternative 5: Hybrid with Flyover	46.0	D	57.5	E	75.6	E	144.4	F
Carmel Creek Road//SR-56 Westbound Ramps/Valley Center Drive	Existing	44.1	D	43.1	D	44.1	D	43.1	D
	Alternative 1: No Build	52.2	D	45.7	D	67.2	E	50.1	D
	Alternative 2: Direct Connector	54.2	D	47.9	D	76.9	E	65.6	E
	Alternative 3: Auxiliary Lane	54.6	D	65.4	E	77.9	E	70.9	E
	Alternative 4: Hybrid	53.0	D	48.4	D	76.0	E	68.2	E
	Alternative 5: Hybrid with Flyover	53.0	D	48.4	D	76.0	E	68.2	E
Carmel Country Road/Carmel Canyon Road	Existing	28.1	C	23.6	C	28.1	C	23.6	C
	Alternative 1: No Build	32.4	C	38.7	D	33.1	C	47.3	D
	Alternative 2: Direct Connector	31.6	C	45.2	D	33.8	C	45.7	D
	Alternative 3: Auxiliary Lane	32.7	C	45.6	D	34.3	C	55.7	E
	Alternative 4: Hybrid	31.6	C	47.6	D	34.5	C	56.9	E
	Alternative 5: Hybrid with Flyover	31.6	C	47.6	D	34.5	C	56.9	E
Carmel Country Road/SR-56 Westbound Off-Ramp	Existing	27.1	C	21.5	C	27.1	C	21.5	C
	Alternative 1: No Build	28.0	C	27.6	C	31.3	C	28.1	C
	Alternative 2: Direct Connector	41.1	D	24.0	C	61.8	E	25.8	C
	Alternative 3: Auxiliary Lane	35.9	D	28.9	C	54.0	D	29.2	C
	Alternative 4: Hybrid	42.6	D	24.8	C	67.6	E	30.7	C
	Alternative 5: Hybrid with Flyover	42.6	D	24.8	C	67.6	E	30.7	C
Carmel Country Road/SR-56 Eastbound Ramps	Existing	25.5	C	33.1	C	25.5	C	33.1	C
	Alternative 1: No Build	31.3	C	34.8	C	34.2	C	42.6	D
	Alternative 2: Direct Connector	33.1	C	34.0	C	44.5	D	36.5	D
	Alternative 3: Auxiliary Lane	33.9	C	41.5	D	42.8	D	69.9	E
	Alternative 4: Hybrid	35.6	C	35.6	D	43.1	D	73.0	E
	Alternative 5: Hybrid with Flyover	35.6	C	35.6	D	43.1	D	73.0	E

Source: LLG 2009

As required by the Protocol, a detailed CO Concentration Analysis was conducted using EMFAC2007 and CALINE4, for the intersections of I-5 Northbound Ramps and Carmel Valley Road, Carmel Creek Road and SR-56 Westbound Ramps/Valley Center Drive, and Carmel Country Road and SR-56 Westbound Off-Ramp for existing conditions, No Build Alternative, and Alternative 3 (Auxiliary Lane Alternative) for both the AM and PM peak hours during opening year (2015) and horizon year (2030). These intersections were chosen due to their potential to create LOS E or F conditions in the years 2015 and 2030, and the high traffic volumes and delay time experienced at these intersections. Alternative 3 was analyzed since it represents the worst-case scenario for CO impacts in terms of LOS, traffic volumes, and delay time.

CO impacts were modeled under worst-case wind angle conditions at 1.5 meters (5 feet) from the roadway edge as public sidewalks occur along all existing roadways, and concentrations at these locations would represent the greatest concentrations of CO due to limited dispersion area. Several other assumptions were developed to perform the CO screening analysis, which include:

- Cruise speeds at freeway ramps are 30 mph.
- Cruise speeds at surface roads are 35 mph.
- Red light time is 50 percent for each roadway at all intersections.
- The ambient 1-hour CO concentration is 5.3 ppm, which is the highest concentration at the San Diego – Beardsley Street Air Quality Monitoring Station for the last three years.
- The mean January low temperature is 48°F (WRCC 2009).
- The mixing height for winter in the project area is 33 feet.
- The intersection of I-5 Northbound Ramps and Carmel Valley Road is at an elevation of approximately 36 feet above mean sea level (AMSL).
- The intersection of Carmel Creek Road and SR-56 Westbound Ramps/Valley Center Drive is at an elevation of approximately 59 feet AMSL.
- The intersection of Carmel Country Road and SR-56 Westbound Off-Ramp is at an elevation of approximately 125 feet AMSL.

Based on these assumptions and the traffic volumes provided in the project traffic study, the CO analysis indicates that the proposed project future traffic conditions would slightly increase CO levels at nearby sensitive receptors or areas immediately adjacent to the intersections more than the no project conditions. CO concentrations due to the proposed project are presented in Table 11, and CO analysis calculations are provided in Appendix B.

CO concentrations estimated at the studied intersections were compared to the federal and state 1-hour CO standards are 35 ppm and 20 ppm, respectively and the federal and state 8-hour CO standards are 9 ppm and 9.0 ppm, respectively. As shown in Table 11, the proposed project's future traffic conditions would not lead to any exceedances of these standards during the AM or PM peak periods at either of the analyzed intersections. All intersections in the project area are predicted to experience less delay time and improved operating conditions than with Alternative 3. Therefore, the proposed project would not result in or contribute to any significant local air quality impacts due to future operations.

Table 11. CO Concentrations - Existing, 2015, and 2030

Intersection	Existing		2015 Alternative 1 No Build Alternative		2015 Alternative 3 Auxiliary Lane Alternative		2030 Alternative 1 No Build Alternative		2030 Alternative 3 Auxiliary Lane Alternative	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1-Hour CO Concentrations (ppm)										
I-5 NB Ramps and Carmel Valley Road	9.8	8.9	8.7	8.4	9.4	9.2	7.0	6.9	7.4	7.4
Carmel Creek Road and Valley Center Drive	7.3	6.9	6.3	6.4	6.3	6.4	5.9	6.0	5.9	6.0
Carmel Country Road and SR-56 WB Ramps	7.7	7.8	7.2	7.1	7.6	7.6	6.4	6.3	6.6	6.5
Federal standard	35									
State standard	20									
8-Hour Concentrations[1] (ppm)										
I-5 NB Ramps and Carmel Valley Road	6.9	6.2	6.1	5.9	6.6	6.4	4.9	4.8	5.2	5.2
Carmel Creek Road and Valley Center Drive	5.1	4.8	4.4	4.5	4.4	4.5	4.1	4.2	4.1	4.2
Carmel Country Road and SR-56 WB Ramps	5.4	5.5	5.0	5.0	5.3	5.3	4.5	4.4	4.6	4.6
Federal standard	9									
State standard	9.0									

[1] 8-hour concentrations are extrapolated based on a 0.7 persistence factor.
ppm = parts per million

Particulate Matter

On March 10, 2006, USEPA published a final rule that establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in $PM_{2.5}$ and PM_{10} nonattainment and maintenance areas. Based on that rule, USEPA and FHWA published *Transportation Conformity Guidance for Qualitative Hot-spot Analysis in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (PM guidance). While the SDAB is not a federally designated $PM_{2.5}$ and PM_{10} nonattainment or maintenance area, it is designated as a state nonattainment area for both pollutants. Thus, to meet state requirements, the proposed project is assessed using the procedure outlined in the PM Guidance.

The PM Guidance describes a qualitative hot spot analysis method that does not involve dispersion modeling. This qualitative $PM_{2.5}$ and PM_{10} hot spot analysis method involves a more streamlined review of local factors such as local monitoring data near a proposed project location.

The $PM_{2.5}$ and PM_{10} hot spot analysis method in the March 2006 PM Guidance involves two steps: determining whether a project is a "project of concern" and, if it is a "project of concern," preparation of a qualitative (emission analysis only) but more detailed analysis of the project.

The PM Guidance defines the following types of projects as projects of air quality concern:

- New or expanded highway project that have a significant number of or significant increase in diesel vehicles;
- Projects affecting intersections that are LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F, because of increased traffic volumes from a significant number of diesel vehicles related to the project;
- New bus and rail terminals, and transfer points, that have a significant number of diesel vehicles congregating at a single location;
- Expanded bus and rail terminals, and transfer points, that significantly increase the number of diesel vehicles congregating at a single location; and,
- Projects in, or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

A significant volume for a new highway or expressway is defined as an annual average daily traffic (AADT) volume of 125,000 or more, and a significant number of diesel vehicles is defined as 8 percent or more of that total AADT or more than 10,000 truck AADT. A significant increase in diesel truck traffic is normally considered to be approximately 10 percent.

The proposed improvements to the I-5/SR-56 corridors would maintain or improve projected future traffic operations. The existing 2009 AADT volume on I-5 is 235,000. The design year (2030) AADT volume without the project is approximately 434,250 vehicles. However, the existing diesel fueled truck percentage within the project limits is 4 percent of the AADT, which is below the threshold of 8 percent. The proposed project would not result in an increase in the ratio of trucks to the volumes and the estimated horizon year (2030) truck AADT would remain at 4 percent.

As indicated in this guidance, pursuant to 40 CFR 93.123(b) (i) and (ii), any new and expanded highway project that does not involve a significant (greater than 8 percent) number or increase in the number of diesel vehicles is a project that is not of air quality concern and consequently does not require a PM_{10} or $PM_{2.5}$ hotspot analysis. Consequently, PM_{10} and $PM_{2.5}$ analyses are not required and were not undertaken in this study.

In addition, PM_{10} and $PM_{2.5}$ concentrations in the SDAB show a general downward trend. Table 12 shows the PM_{10} and $PM_{2.5}$ concentrations observed at the Beardsley Street monitoring station from 2005 to 2008, in comparison with federal and state standards.

Table 12. PM_{10} and $PM_{2.5}$ Trends at the Beardsley Street Monitoring Station

Pollutant	Averaging Time	Federal Primary Standards	California Air Quality Standards	Maximum Concentrations (μg/m^3)			
				2005	2006	2007	2008
PM_{10}	24 hours	150 μg/m^3	50 μg/m^3	77.0	71.0	55.0	58.0
	Annual	Revoked	20 μg/m^3	37.0	34.0	30.0	29.0
$PM_{2.5}$	24 hours	35 μg/m^3	none	44.0	63.0	52.0	42.0
	Annual	15 μg/m^3	12 μg/m^3	16.0	13.0	12.0	14.0

PM data for October 21-27, 2007, was designated as "exceptional event" data due to wildfires and is not included in this table.
Source: SDAPCD 2008b

The proposed project is located in an attainment area for federal PM_{10} and $PM_{2.5}$ standards, and in a nonattainment area of state PM_{10} and $PM_{2.5}$ standards. Based on screening using USEPA PM Guidance, the proposed project is not a Project of Air Quality Concern because it does not meet the criteria due to relatively low truck AADT, truck percentage, and increase in truck volumes comparing the Build Alternatives and No Build Alternative. The proposed project would improve traffic operations by smoothing traffic flow and would contribute to lower PM emissions as compared to the No Build Alternative. The proposed project is therefore in conformance for federal PM_{10} and $PM_{2.5}$ standards and is unlikely to increase the frequency or severity of any existing exceedances regarding the nonattainment of state PM_{10} and $PM_{2.5}$ standards.

Mobile Source Air Toxics

USEPA currently recommends following the March 2007 report entitled "Analyzing, Documenting, and Communicating the Impacts of Mobile Source Air Toxic Emissions in the NEPA Process" (AASHTO 2007). FHWA recognizes that FHWA and USEPA are currently undergoing mediation on the FHWA Interim Guidance. FHWA will commit to performing the quantitative assessment utilizing the methodology agreed upon as a result of the mediation process. Evaluating the environmental and health impacts from MSATs on a proposed highway project may involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, there are various studies that show some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of USEPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or state level.

USEPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The USEPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from USEPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Benzene** is characterized as a known human carcinogen.
- The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- **Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- **1,3-butadiene** is characterized as carcinogenic to humans by inhalation.

- **Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- **Diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
- **Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by USEPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes—particularly respiratory problems (South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 studies on the relationship between health and air quality); and NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein).

Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants.

In this document, FHWA has provided a qualitative assessment of MSAT emissions relative to the various alternatives and has acknowledged that all the project alternatives may result in increased exposure to MSAT emissions in certain locations.

It is possible to qualitatively assess the levels of future MSAT emissions under the project. A qualitative analysis cannot identify and measure health impacts from MSATs, but it can give a basis for identifying and comparing the potential differences among MSAT emissions—if any—from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic*

Emissions Among Transportation Project Alternatives, found at: www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm.

The amount of MSATs emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT for the Build Alternatives would be slightly higher than that for the No Build Alternative, because the project would increase the efficiency of the roadway and attract rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to USEPA's MOBILE6 emissions model, emissions of all of the priority MSATs except for diesel PM decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models.

Evaluation of Project MSAT Potential

FHWA has developed a tiered approach for analyzing MSATs in NEPA documents. Depending on the specific project circumstances, FHWA has identified three levels of analysis:

- No analysis for projects with no potential for meaningful MSAT effects, Category (1);
- Qualitative analysis for projects with low potential MSAT effects, Category (2); or
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects, Category (3).

Category (1) is limited to projects that

- qualify as a categorical exclusion under 23 CFR 771.117(c);
- are exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or
- have no meaningful impacts on traffic volumes or vehicle mix.

The proposed project does not meet any of the Category (1) requirements.

For a project to be of the magnitude to have a higher potential for MSAT effects, Category (3), a project must:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year;

And also:

- be proposed to be located in proximity to populated areas or in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

The proposed project would include new freeway-to-freeway connector ramps, improvements to the surface streets, addition of auxiliary lanes along SR-56 and I-5, and/or interchange improvements. Thus, the project is not expected to facilitate significant additional capacity on I-5 and SR-56. Therefore, the proposed project would not be included in Category (3).

Therefore, by default, the proposed project would be included in Category (2) and would have a low potential for MSAT effects.

Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of USEPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

5.2 CONSTRUCTION IMPACTS

Construction-related activities would result in project-generated emissions of criteria air pollutants (e.g., PM_{10}) and precursors (e.g., ROG and NO_X). Emissions of fugitive PM dust (e.g., PM_{10} and $PM_{2.5}$) are associated primarily with ground disturbance activities during site preparation; e.g., site clearing, excavation, vehicle travel on paved and unpaved roads, and grading, and vary as a function of such parameters as soil silt content, soil moisture, wind speed, acreage of disturbance area, and VMT on- and off-site. A secondary source of pollutants during construction would be the engine exhaust from construction equipment. The primary pollutants of concern would be NO_X and VOC emissions that would contribute to the formation of ozone, which is a regional pollutant. Emissions of NO_X and VOC would be primarily associated with off-road (e.g., gas and diesel) construction equipment exhaust; secondary sources would include on-road trucks for import and export of materials and worker commuting.

Federal conformity regulations require analysis of construction impacts for projects when construction activities will last for more than five years. The proposed project would be complete in 2015 and construction would last less than five years; therefore, no quantitative estimates of regional construction emissions have been made. However, it is recommended that specific measures to control dust and particulates be incorporated into project specifications. These measures are identified in Chapter 6.0.

Local Emissions

According to 40 CFR, Part 51, Section 93.123 (5), CO, PM_{10}, and $PM_{2.5}$ hot spot analyses are not required for construction-related activities, which create a temporary increase in air emissions. A temporary increase in air emissions is defined as an increase that would only occur during a construction phase and would last for five years or less at any individual site. Construction-related activities would result in short-term emissions of PM_{10} and $PM_{2.5}$ from soil excavation and grading operations, and VOC, NO_X, and CO emissions from the exhaust of off-road heavy-duty diesel equipment used for site preparation (e.g., excavation, grading, and clearing); paving; and other construction activities. Construction activities leading to the generation of ozone precursors and criteria pollutant emissions would be temporary and short in duration and would not be expected to occur at the same site for more than a few days. Thus, project-generated emissions of criteria air pollutants and precursors would not expose sensitive receptors to substantial pollutant concentrations. It is concluded that local ambient air quality impacts from construction would not be significant.

5.3 CUMULATIVE IMPACTS

The analysis of project impacts to regional air quality, as performed by SANDAG as part of the RTP and RTIP conformity process, is a cumulative analysis. The proposed project would conform to the assumptions in the conformity analyses for the 2030 RTP and 2008 RTIP, which are long-range planning documents that include roadway projects throughout the region. Therefore, the project would not result in a cumulative impact to air quality.

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CHAPTER 6.0
POLLUTION ABATEMENT MEASURES

It is recommended that the following measures be incorporated into the project to minimize fugitive emissions of PM_{10}, and $PM_{2.5}$:

- Minimize land disturbance to the extent feasible.
- Use watering trucks to minimize dust; watering should be sufficient to confine dust plumes to the project work areas.
- Suspend grading and earth moving when wind gusts exceed 25 mph unless the soil is wet enough to prevent dust plumes.
- Cover all trucks hauling dirt when traveling at speeds greater than 15 mph.
- Stabilize the surface of dirt piles if not removed within 2 days.
- Limit vehicular paths on unpaved surfaces and stabilize any temporary roads.
- Minimize unnecessary vehicular and machinery activities.
- Sweep paved streets at least once per day where there is evidence of dirt that has been carried on to the roadway.
- Revegetate disturbed land, including vehicular paths created during construction, to avoid future off-road vehicular activities.
- Remove unused material.

It is recommended that the following measures be incorporated into the project to minimize exposure to diesel PM.

- Locate construction equipment and truck staging and maintenance areas as far as feasible and nominally downwind of schools, active recreation areas, and other areas of high population density.

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CHAPTER 7.0
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APPENDIX A

INTERSECTION LOS DATA

APPENDIX A
EXISTING, 2015 AND 2030 INTERSECTION OPERATIONS

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
I-5 Southbound Ramps/Via De La Valle	Existing	15.1	B	14.4	B	15.1	B	14.4	B
	Alternative 1: No Build	28.0	C	16.2	B	29.3	C	25.6	C
	Alternative 2: Direct Connector	26.9	C	16.1	B	29.2	C	22.5	C
	Alternative 3: Auxiliary Lane	28.0	C	16.2	B	29.3	C	25.6	C
	Alternative 4: Hybrid	28.0	C	16.2	B	29.3	C	25.6	C
	Alternative 5: Hybrid with Flyover	28.0	C	16.2	B	29.3	C	25.6	C
I-5 Northbound Ramps/Via De La Valle	Existing	18.8	B	20.8	C	18.8	B	20.8	C
	Alternative 1: No Build	23.1	C	31.2	C	27.4	C	42.1	D
	Alternative 2: Direct Connector	23.0	C	28.2	C	27.2	C	40.6	D
	Alternative 3: Auxiliary Lane	23.1	C	31.2	C	27.4	C	42.1	D
	Alternative 4: Hybrid	23.1	C	28.6	C	27.3	C	41.9	D
	Alternative 5: Hybrid with Flyover	23.1	C	28.6	C	27.3	C	41.9	D
El Camino Real West/Via De La Valle	Existing	**71.0**	**E**	46.8	D	**71.0**	**E**	46.8	D
	Alternative 1: No Build	35.0	C	35.9	D	47.7	D	49.1	D
	Alternative 2: Direct Connector	34.4	C	28.8	C	44.6	D	46.4	D
	Alternative 3: Auxiliary Lane	35.0	C	35.9	D	47.7	D	49.1	D
	Alternative 4: Hybrid	34.9	C	29.0	C	46.2	D	47.6	D
	Alternative 5: Hybrid with Flyover	34.9	C	29.0	C	46.2	D	47.6	D
El Camino Real/San Dieguito Drive	Existing	18.2	B	28.1	C	18.2	B	28.1	C
	Alternative 1: No Build	18.0	B	20.1	C	19.6	B	27.7	C
	Alternative 2: Direct Connector	15.7	B	19.0	B	17.6	B	24.2	C
	Alternative 3: Auxiliary Lane	18.0	B	20.1	C	19.6	B	27.7	C
	Alternative 4: Hybrid	15.9	B	19.4	B	19.4	B	26.0	C
	Alternative 5: Hybrid with Flyover	15.9	B	19.4	B	19.4	B	26.0	C
Camino Del Mar/Del Mar Heights Road	Existing	32.3	C	29.7	C	32.3	C	29.7	C
	Alternative 1: No Build	35.7	D	40.4	D	38.9	D	**241.6**	**F**
	Alternative 2: Direct Connector	35.7	D	40.4	D	38.9	D	**241.6**	**F**
	Alternative 3: Auxiliary Lane	35.7	D	40.4	D	38.9	D	**241.6**	**F**
	Alternative 4: Hybrid	35.7	D	40.4	D	38.9	D	**241.6**	**F**
	Alternative 5: Hybrid with Flyover	35.7	D	40.4	D	38.9	D	**241.6**	**F**

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
Mango Drive/Del Mar Heights Road	Existing	45.3	D	39.9	D	45.3	D	39.9	D
	Alternative 1: No Build	48.6	D	43.1	D	**57.2**	**E**	48.3	D
	Alternative 2: Direct Connector	48.6	D	43.1	D	**57.2**	**E**	48.3	D
	Alternative 3: Auxiliary Lane	48.6	D	43.1	D	**57.2**	**E**	48.3	D
	Alternative 4: Hybrid	48.6	D	43.1	D	**57.2**	**E**	48.3	D
	Alternative 5: Hybrid with Flyover	48.6	D	43.1	D	**57.2**	**E**	48.3	D
Portofino Drive/Del Mar Heights Road [c]	Existing	10.9	B	9.9	A	10.9	B	9.9	A
	Alternative 1: No Build	11.1	B	10.8	B	14.4	B	11.2	B
	Alternative 2: Direct Connector	11.1	B	10.8	B	14.4	B	11.2	B
	Alternative 3: Auxiliary Lane	11.1	B	10.8	B	14.4	B	11.2	B
	Alternative 4: Hybrid	11.1	B	10.8	B	14.4	B	11.2	B
	Alternative 5: Hybrid with Flyover	11.1	B	10.8	B	14.4	B	11.2	B
I-5 Southbound Ramps/Del Mar Heights Road	Existing	24.7	C	20.5	C	24.7	C	20.5	C
	Alternative 1: No Build	49.8	D	46.4	D	**56.6**	**E**	**58.2**	**E**
	Alternative 2: Direct Connector	25.7	C	20.8	C	29.6	C	21.8	C
	Alternative 3: Auxiliary Lane	49.8	D	46.4	D	**56.6**	**E**	**58.2**	**E**
	Alternative 4: Hybrid	49.8	D	46.4	D	**56.6**	**E**	**58.2**	**E**
	Alternative 5: Hybrid with Flyover	49.8	D	46.4	D	**56.6**	**E**	**58.2**	**E**
I-5 Northbound Ramps/Del Mar Heights Road	Existing	52.9	D	**92.0**	**F**	52.9	D	**92.0**	**F**
	Alternative 1: No Build	**71.4**	**E**	44.9	D	**106.5**	**F**	**66.4**	**E**
	Alternative 2: Direct Connector	**56.5**	**E**	42.4	D	**77.9**	**E**	**60.4**	**E**
	Alternative 3: Auxiliary Lane	**71.4**	**E**	44.9	D	**106.5**	**F**	**66.4**	**E**
	Alternative 4: Hybrid	**57.6**	**E**	44.0	D	**81.3**	**F**	**62.1**	**E**
	Alternative 5: Hybrid with Flyover	57.6	**E**	44.0	D	**81.3**	**F**	**62.1**	**E**
High Bluff Drive/Del Mar Heights Road	Existing	27.4	C	31.7	C	27.4	C	31.7	C
	Alternative 1: No Build	38.4	D	49.5	D	52.7	D	**64.3**	**E**
	Alternative 2: Direct Connector	32.1	C	33.1	C	32.4	C	33.8	C
	Alternative 3: Auxiliary Lane	38.4	D	49.5	D	52.7	D	**64.3**	**E**
	Alternative 4: Hybrid	32.7	C	34.7	C	37.2	D	**57.7**	**E**
	Alternative 5: Hybrid with Flyover	32.7	C	34.7	C	37.2	D	**57.7**	**E**

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
El Camino Real/Del Mar Heights Road	Existing	29.9	C	36.1	D	29.9	C	36.1	D
	Alternative 1: No Build	40.6	D	53.2	D	**58.9**	**E**	**61.7**	**E**
	Alternative 2: Direct Connector	34.6	C	38.4	D	39.4	D	42.8	D
	Alternative 3: Auxiliary Lane	40.6	D	53.2	D	**58.9**	**E**	**61.7**	**E**
	Alternative 4: Hybrid	35.3	D	39.0	D	48.2	D	**57.7**	**E**
	Alternative 5: Hybrid with Flyover	35.3	D	39.0	D	48.2	D	**57.7**	**E**
Signature Pointe Driveway/Del Mar Heights Road	Existing	46.1	D	41.3	D	46.1	D	41.3	D
	Alternative 1: No Build	47.6	D	54.5	D	48.9	D	**62.5**	**E**
	Alternative 2: Direct Connector	45.6	D	47.5	D	47.0	D	52.9	D
	Alternative 3: Auxiliary Lane	47.6	D	54.5	D	48.9	D	**62.5**	**E**
	Alternative 4: Hybrid	46.6	D	52.1	D	48.3	D	**59.6**	**E**
	Alternative 5: Hybrid with Flyover	46.6	D	52.1	D	48.3	D	**59.6**	**E**
Carmel Country Road/Hartfield Avenue/Del Mar Heights Road	Existing	35.7	D	36.0	D	35.7	D	36.0	D
	Alternative 1: No Build	40.8	D	45.9	D	**56.6**	**E**	**58.8**	**E**
	Alternative 2: Direct Connector	35.7	D	37.1	D	39.9	D	40.6	D
	Alternative 3: Auxiliary Lane	40.8	D	45.9	D	**56.6**	**E**	**58.8**	**E**
	Alternative 4: Hybrid	36.9	D	37.5	D	40.2	D	48.8	D
	Alternative 5: Hybrid with Flyover	36.9	D	37.5	D	40.2	D	48.8	D
Carmel Canyon Road/Del Mar Heights Road	Existing	22.7	C	20.8	C	22.7	C	20.8	C
	Alternative 1: No Build	28.0	C	24.7	C	31.2	C	27.0	C
	Alternative 2: Direct Connector	27.4	C	24.1	C	29.8	C	24.9	C
	Alternative 3: Auxiliary Lane	28.0	C	24.7	C	31.2	C	27.0	C
	Alternative 4: Hybrid	27.9	C	24.5	C	31.0	C	26.6	C
	Alternative 5: Hybrid with Flyover	27.9	C	24.5	C	31.0	C	26.6	C
Carmel Valley Road/Del Mar Heights Road	Existing	–	–	–	–	–	–	–	–
	Alternative 1: No Build	–	–	–	–	–	–	–	–
	Alternative 2: Direct Connector	–	–	–	–	–	–	–	–
	Alternative 3: Auxiliary Lane	–	–	–	–	–	–	–	–
	Alternative 4: Hybrid	–	–	–	–	–	–	–	–
	Alternative 5: Hybrid with Flyover	–	–	–	–	–	–	–	–

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
El Camino Real/Townsgate Drive	Existing	19.1	B	14.6	B	19.1	B	14.6	B
	Alternative 1: No Build	21.5	C	15.7	B	26.8	C	19.9	B
	Alternative 2: Direct Connector	21.5	C	15.7	B	26.8	C	19.9	B
	Alternative 3: Auxiliary Lane	21.5	C	15.7	B	26.8	C	19.9	B
	Alternative 4: Hybrid	21.5	C	15.7	B	26.8	C	19.9	B
	Alternative 5: Hybrid with Flyover	21.5	C	15.7	B	26.8	C	19.9	B
Carmel Country Road/Townsgate Drive	Existing	42.3	D	34.9	C	42.3	D	34.9	C
	Alternative 1: No Build	43.6	D	39.1	D	**64.2**	**E**	49.2	D
	Alternative 2: Direct Connector	42.5	D	35.7	D	53.5	D	41.5	D
	Alternative 3: Auxiliary Lane	43.6	D	39.1	D	**64.2**	**E**	49.2	D
	Alternative 4: Hybrid	42.6	D	36.1	D	54.4	D	47.9	D
	Alternative 5: Hybrid with Flyover	42.6	D	36.1	D	54.4	D	47.9	D
El Camino Real/High Bluff Drive	Existing	31.7	C	36.4	D	31.7	C	36.4	D
	Alternative 1: No Build	34.2	C	42.3	D	35.6	D	49.9	D
	Alternative 2: Direct Connector	32.6	C	38.7	D	33.0	C	44.8	D
	Alternative 3: Auxiliary Lane	34.2	C	42.3	D	35.6	D	49.9	D
	Alternative 4: Hybrid	32.9	C	41.8	D	35.0	C	49.3	D
	Alternative 5: Hybrid with Flyover	32.9	C	41.8	D	35.0	C	49.3	D
Carmel Country Road/Carmel Creek Road	Existing	38.9	D	44.7	D	38.9	D	44.7	D
	Alternative 1: No Build	47.1	D	54.8	D	**55.6**	**E**	**66.0**	**E**
	Alternative 2: Direct Connector	46.3	D	49.9	D	51.9	D	52.8	D
	Alternative 3: Auxiliary Lane	46.5	D	53.9	D	**55.2**	**E**	**65.9**	**E**
	Alternative 4: Hybrid	46.3	D	54.4	D	54.8	D	**62.4**	**E**
	Alternative 5: Hybrid with Flyover	46.3	D	54.4	D	54.8	D	**62.4**	**E**
Carmel Creek Road/Del Mar Trails Road [d]	Existing	–	–	–	–	–	–	–	–
	Alternative 1: No Build	–	–	–	–	–	–	–	–
	Alternative 2: Direct Connector	–	–	–	–	–	–	–	–
	Alternative 3: Auxiliary Lane	–	–	–	–	–	–	–	–
	Alternative 4: Hybrid	–	–	–	–	–	–	–	–
	Alternative 5: Hybrid with Flyover	–	–	–	–	–	–	–	–

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
Camino Del Mar/Carmel Valley Road	Existing	27.1	C	13.7	B	27.1	C	13.7	B
	Alternative 1: No Build	27.8	C	16.6	B	30.1	C	30.9	C
	Alternative 2: Direct Connector	27.8	C	16.6	B	30.1	C	30.9	C
	Alternative 3: Auxiliary Lane	27.8	C	16.6	B	30.1	C	30.9	C
	Alternative 4: Hybrid	27.8	C	16.6	B	30.1	C	30.9	C
	Alternative 5: Hybrid with Flyover	27.8	C	16.6	B	30.1	C	30.9	C
Portofino Drive/Carmel Valley Road	Existing	28.0	C	66.4	E	28.0	C	66.4	E
	Alternative 1: No Build	40.2	D	**117.6**	**F**	**132.9**	**F**	**186.5**	**F**
	Alternative 2: Direct Connector	40.2	D	**117.6**	**F**	**132.9**	**F**	**186.5**	**F**
	Alternative 3: Auxiliary Lane	40.2	D	**117.6**	**F**	**132.9**	**F**	**186.5**	**F**
	Alternative 4: Hybrid	40.2	D	**117.6**	**F**	**132.9**	**F**	**186.5**	**F**
	Alternative 5: Hybrid with Flyover	40.2	D	**117.6**	**F**	**132.9**	**F**	**186.5**	**F**
Sorrento Valley Road/Carmel Valley Road	Existing	19.3	B	18.2	B	19.3	B	18.2	B
	Alternative 1: No Build	19.8	B	24.4	C	22.1	C	26.1	C
	Alternative 2: Direct Connector	19.8	B	24.4	C	22.1	C	25.8	C
	Alternative 3: Auxiliary Lane	19.8	B	24.4	C	22.1	C	26.1	C
	Alternative 4: Hybrid	19.8	B	24.4	C	22.1	C	26.1	C
	Alternative 5: Hybrid with Flyover	19.8	B	24.4	C	22.1	C	26.1	C
I-5 Southbound Ramps/Carmel Valley Road	Existing	26.8	C	28.2	C	26.8	C	28.2	C
	Alternative 1: No Build	**56.3**	**E**	**94.5**	**F**	**101.9**	**F**	**198.6**	**F**
	Alternative 2: Direct Connector	27.0	C	30.9	C	68.5	C	32.1	C
	Alternative 3: Auxiliary Lane	49.1	D	**80.3**	**F**	**27.8**	**E**	**105.5**	**F**
	Alternative 4: Hybrid	**70.1**	**E**	**103.0**	**F**	**105.6**	**F**	**126.2**	**F**
	Alternative 5: Hybrid with Flyover	43.3	D	**65.3**	**E**	**72.7**	**E**	**93.2**	**F**
I-5 Northbound Ramps/Carmel Valley Road	Existing	33.5	C	**58.6**	**E**	33.5	C	**58.6**	**E**
	Alternative 1: No Build	49.8	D	**61.7**	**E**	**59.7**	**E**	**69.0**	**E**
	Alternative 2: Direct Connector	41.1	D	47.0	D	**61.8**	**E**	**69.7**	**E**
	Alternative 3: Auxiliary Lane	**82.0**	**F**	**98.0**	**F**	**90.4**	**F**	**145.8**	**F**
	Alternative 4: Hybrid	**56.9**	**E**	**64.9**	**E**	**96.9**	**F**	**148.9**	**F**
	Alternative 5: Hybrid with Flyover	46.0	D	**57.5**	**E**	**75.6**	**E**	**144.4**	**F**

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
Old Camino Real/Carmel Valley Road	Existing	9.1	A	9.2	A	9.1	A	9.2	A
	Alternative 1: No Build	14.2	B	11.2	B	18.8	B	13.6	B
	Alternative 2: Direct Connector	12.4	B	12.9	B	15.0	B	18.0	B
	Alternative 3: Auxiliary Lane	13.4	B	13.7	B	20.7	B	18.2	B
	Alternative 4: Hybrid	14.5	B	17.2	B	19.9	B	18.1	B
	Alternative 5: Hybrid with Flyover	–	–	–	–	–	–	–	–
El Camino Real/Valley Center Drive	Existing	29.1	C	34.0	C	29.1	C	34.0	C
	Alternative 1: No Build	30.3	C	36.1	D	38.2	D	39.5	D
	Alternative 2: Direct Connector	30.2	C	35.4	D	43.5	D	39.3	D
	Alternative 3: Auxiliary Lane	30.3	C	36.1	D	38.2	D	39.5	D
	Alternative 4: Hybrid	30.2	C	35.4	D	45.1	D	39.4	D
	Alternative 5: Hybrid with Flyover	30.2	C	35.4	D	45.1	D	39.4	D
El Camino Real/SR-56 Westtbound Off-Ramp/Carmel Valley Road	Existing	29.2	C	32.0	C	29.2	C	32.0	C
	Alternative 1: No Build	51.1	D	32.4	C	**66.8**	**E**	37.8	D
	Alternative 2: Direct Connector	32.8	C	23.8	C	37.7	D	28.3	C
	Alternative 3: Auxiliary Lane	35.8	D	30.7	C	41.9	D	31.1	C
	Alternative 4: Hybrid	33.2	C	24.2	C	38.6	D	30.9	C
	Alternative 5: Hybrid with Flyover	33.2	C	24.2	C	38.6	D	30.9	C
El Camino Real/SR-56 Eastbound On-Ramp/Carmel Valley Road	Existing	15.9	B	**59.2**	**E**	15.9	B	**59.2**	**E**
	Alternative 1: No Build	41.1	D	**109.1**	**F**	**61.3**	**E**	**157.7**	**F**
	Alternative 2: Direct Connector	23.3	C	52.8	D	34.8	C	**72.2**	**E**
	Alternative 3: Auxiliary Lane	25.7	C	**108.6**	**F**	45.3	D	**152.3**	**F**
	Alternative 4: Hybrid	25.7	C	**108.6**	**F**	45.3	D	**152.3**	**F**
	Alternative 5: Hybrid with Flyover	24.0	C	54.7	D	35.6	D	**86.4**	**F**
Carmel Creek Road/SR-56 Westbound Ramps/Valley Center Drive	Existing	44.1	D	43.1	D	44.1	D	43.1	D
	Alternative 1: No Build	52.2	D	45.7	D	**67.2**	**E**	50.1	D
	Alternative 2: Direct Connector	54.2	D	47.9	D	**76.9**	**E**	**65.6**	**E**
	Alternative 3: Auxiliary Lane	54.6	D	**65.4**	**E**	**77.9**	**E**	**70.9**	**E**
	Alternative 4: Hybrid	53.0	D	48.4	D	**76.0**	**E**	**68.2**	**E**
	Alternative 5: Hybrid with Flyover	53.0	D	48.4	D				

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
Carmel Creek Road/SR-56 Eastbound Ramps	Existing	37.8	D	42.3	D	37.8	D	42.3	D
	Alternative 1: No Build	38.2	D	44.4	D	40.6	D	50.4	D
	Alternative 2: Direct Connector	32.5	C	40.3	D	36.7	D	47.5	D
	Alternative 3: Auxiliary Lane	32.6	C	41.9	D	37.6	D	52.2	D
	Alternative 4: Hybrid	32.6	C	41.1	D	37.0	D	48.3	D
	Alternative 5: Hybrid with Flyover	32.6	C	41.1	D	37.0	D	48.3	D
Carmel Country Road/Carmel Canyon Road	Existing	28.1	C	23.6	C	28.1	C	23.6	C
	Alternative 1: No Build	32.4	C	38.7	D	33.1	C	47.3	D
	Alternative 2: Direct Connector	31.6	C	45.2	D	33.8	C	45.7	D
	Alternative 3: Auxiliary Lane	32.7	C	45.6	D	34.3	C	**55.7**	**E**
	Alternative 4: Hybrid	31.6	C	47.6	D	34.5	C	**56.9**	**E**
	Alternative 5: Hybrid with Flyover	31.6	C	47.6	D	34.5	C	**56.9**	**E**
Carmel Country Road/SR-56 Westbound Off-Ramp	Existing	27.1	C	21.5	C	27.1	C	21.5	C
	Alternative 1: No Build	28.0	C	27.6	C	31.3	C	28.1	C
	Alternative 2: Direct Connector	41.1	D	24.0	C	**61.8**	**E**	25.8	C
	Alternative 3: Auxiliary Lane	35.9	D	28.9	C	54.0	D	29.2	C
	Alternative 4: Hybrid	42.6	D	24.8	C	**67.6**	**E**	30.7	C
	Alternative 5: Hybrid with Flyover	42.6	D	24.8	C	**67.6**	**E**	30.7	C
Carmel Country Road/SR-56 Eastbound Ramps	Existing	25.5	C	33.1	C	25.5	C	33.1	C
	Alternative 1: No Build	31.3	C	34.8	C	34.2	C	42.6	D
	Alternative 2: Direct Connector	33.1	C	34.0	C	44.5	D	36.5	D
	Alternative 3: Auxiliary Lane	33.9	C	41.5	D	42.8	D	69.9	E
	Alternative 4: Hybrid	35.6	D	35.6	D	43.1	D	73.0	E
	Alternative 5: Hybrid with Flyover	35.6	D	35.6	D	43.1	D	73.0	E
Carmel Valley Road/SR-56 Westbound Ramps	Existing	6.2	A	3.6	A	6.2	A	3.6	A
	Alternative 1: No Build	11.0	B	20.0	B	11.7	B	19.6	B
	Alternative 2: Direct Connector	9.7	A	16.6	B	10.3	B	18.9	B
	Alternative 3: Auxiliary Lane	11.0	B	20.0	B	11.7	B	19.6	B
	Alternative 4: Hybrid	9.8	A	16.8	B	10.3	B	19.0	B
	Alternative 5: Hybrid with Flyover	9.8	A	16.8	B	10.3	B	19.0	B

Intersection	Alternative	2015				2030			
		AM		PM		AM		PM	
		Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]	Delay [a]	LOS [b]
Carmel Valley Road/SR-56 Eastbound Ramps	Existing	22.4	C	22.9	C	22.4	C	22.9	C
	Alternative 1: No Build	44.8	D	45.0	D	45.6	D	46.9	D
	Alternative 2: Direct Connector	43.5	D	44.1	D	45.0	D	45.5	D
	Alternative 3: Auxiliary Lane	44.8	D	45.0	D	45.6	D	46.9	D
	Alternative 4: Hybrid	44.0	D	45.0	D	46.0	D	46.8	D
	Alternative 5: Hybrid with Flyover	44.0	D	45.0	D	46.0	D	46.8	D
Sorrento Valley Road/Carmel Mountain Road	Existing	24.0	C	14.0	B	24.0	C	14.0	B
	Alternative 1: No Build	24.6	C	16.1	B	25.0	C	21.8	C
	Alternative 2: Direct Connector	24.6	C	16.1	B	25.0	C	21.8	C
	Alternative 3: Auxiliary Lane	24.6	C	16.1	B	25.0	C	21.8	C
	Alternative 4: Hybrid	24.6	C	16.1	B	25.0	C	21.8	C
	Alternative 5: Hybrid with Flyover	24.6	C	16.1	B	25.0	C	21.8	C
I-5 Southbound Ramps/Carmel Mountain Road	Existing	36.1	D	29.7	C	36.1	D	29.7	C
	Alternative 1: No Build	36.5	D	31.6	C	37.0	D	32.4	C
	Alternative 2: Direct Connector	36.5	D	31.6	C	37.0	D	32.4	C
	Alternative 3: Auxiliary Lane	36.5	D	31.6	C	37.0	D	32.4	C
	Alternative 4: Hybrid	36.5	D	31.6	C	37.0	D	32.4	C
	Alternative 5: Hybrid with Flyover	36.5	D	31.6	C	37.0	D	32.4	C
I-5 Northbound Ramps/Carmel Mountain Road	Existing	43.7	D	30.8	C	43.7	D	30.8	C
	Alternative 1: No Build	48.9	D	33.2	C	**60.0**	**E**	37.5	D
	Alternative 2: Direct Connector	48.9	D	33.2	C	**60.0**	**E**	37.5	D
	Alternative 3: Auxiliary Lane	48.9	D	33.2	C	**60.0**	**E**	37.5	D
	Alternative 4: Hybrid	48.9	D	33.2	C	**60.0**	**E**	37.5	D
	Alternative 5: Hybrid with Flyover	48.9	D	33.2	C	**60.0**	**E**	37.5	D
Vista Sorrento Parkway/Torrey View Court/Carmel Mountain Road	Existing	22.3	C	34.5	C	22.3	C	34.5	C
	Alternative 1: No Build	24.6	C	49.2	D	28.7	C	**72.3**	**E**
	Alternative 2: Direct Connector	24.6	C	49.2	D	28.7	C	**72.3**	**E**
	Alternative 3: Auxiliary Lane	24.6	C	49.2	D	28.7	C	**72.3**	**E**
	Alternative 4: Hybrid	24.6	C	49.2	D	28.7	C	**72.3**	**E**
	Alternative 5: Hybrid with Flyover	24.6	C	49.2	D	28.7	C	**72.3**	**E**

Intersection	**Alternative**	**2015**				**2030**			
		AM		**PM**		**AM**		**PM**	
		Delay [a]	**LOS [b]**	**Delay [a]**	**LOS [b]**	**Delay [a]**	**LOS [b]**	**Delay [a]**	**LOS [b]**
El Camino Real/Carmel Mountain Road	Existing	29.7	C	34.1	C	29.7	C	34.1	C
	Alternative 1: No Build	**56.9**	**E**	52.8	D	**176.4**	**F**	**112.9**	**F**
	Alternative 2: Direct Connector	**56.9**	**E**	52.8	D	**176.4**	**F**	**112.9**	**F**
	Alternative 3: Auxiliary Lane	**56.9**	**E**	52.8	D	**176.4**	**F**	**112.9**	**F**
	Alternative 4: Hybrid	**56.9**	**E**	52.8	D	**176.4**	**F**	**112.9**	**F**
	Alternative 5: Hybrid with Flyover	**56.9**	**E**	52.8	D	**176.4**	**F**	**112.9**	**F**

[a] Average delay expressed in seconds per vehicle.
[b] Level of Service.
[c] Two-Way Stop Controlled intersection. Minor street left turn delay is reported.
[d] All-way Stop controlled intersection.
Bold typeface shows intersections operating at LOS E or F.
Source: LLG 2009

APPENDIX B

CARBON MONOXIDE (CO) ANALYSIS WORKSHEETS

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Total Organic Gases Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.894	0.797	1.065	7.928	3.300	6.547	1.218
5	0.756	0.675	0.944	7.928	3.300	6.547	1.095
6	0.697	0.624	0.870	7.175	3.063	6.215	1.006
8	0.596	0.535	0.744	5.815	2.653	5.633	0.851
9	0.552	0.497	0.690	5.205	2.475	5.377	0.784
10	0.513	0.463	0.641	4.641	2.312	5.143	0.722
11	0.478	0.431	0.596	4.122	2.163	4.928	0.666
12	0.446	0.403	0.556	3.648	2.027	4.730	0.615
15	0.367	0.333	0.456	2.482	1.685	4.231	0.489
23	0.237	0.217	0.291	1.271	1.101	3.409	0.310
24	0.227	0.207	0.278	1.214	1.051	3.346	0.297
25	0.217	0.199	0.265	1.161	1.005	3.290	0.285
26	0.208	0.191	0.254	1.111	0.962	3.241	0.274
27	0.200	0.183	0.243	1.063	0.923	3.198	0.264
28	0.193	0.177	0.234	1.018	0.886	3.162	0.254

Pollutant Name: Carbon Monoxide Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	7.746	8.051	10.115	29.452	25.116	46.440	9.423
5	7.168	7.471	9.528	29.452	25.116	46.440	8.872
6	6.909	7.208	9.041	27.309	22.922	44.484	8.487
8	6.442	6.732	8.189	23.578	19.225	41.065	7.803
9	6.232	6.517	7.816	21.953	17.668	39.575	7.499
10	6.035	6.314	7.473	20.467	16.275	38.217	7.217
11	5.850	6.124	7.158	19.107	15.027	36.979	6.955
12	5.677	5.946	6.867	17.862	13.907	35.854	6.711
15	5.216	5.468	6.122	14.717	11.177	33.077	6.074
23	4.311	4.522	4.782	9.706	6.908	29.137	4.900
24	4.223	4.429	4.661	9.310	6.573	28.938	4.792
25	4.139	4.340	4.548	8.943	6.269	28.799	4.691
26	4.060	4.256	4.443	8.602	5.992	28.718	4.595
27	3.984	4.176	4.344	8.284	5.740	28.694	4.506
28	3.913	4.100	4.251	7.990	5.512	28.729	4.422

Pollutant Name: Oxides of Nitrogen Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.735	1.077	1.741	27.543	32.863	1.281	2.100
5	0.693	1.010	1.672	27.543	32.863	1.281	2.048
6	0.673	0.978	1.621	25.796	31.057	1.288	1.949
8	0.638	0.920	1.528	22.658	27.908	1.303	1.772
9	0.621	0.894	1.486	21.264	26.536	1.310	1.693
10	0.606	0.869	1.447	19.987	25.282	1.318	1.619
11	0.592	0.846	1.411	18.824	24.137	1.326	1.552
12	0.578	0.824	1.377	17.776	23.090	1.334	1.491
15	0.542	0.766	1.289	15.308	20.460	1.360	1.341
23	0.471	0.655	1.129	12.990	16.180	1.435	1.151
24	0.465	0.645	1.116	12.875	15.853	1.445	1.138
25	0.459	0.636	1.103	12.768	15.562	1.455	1.125
26	0.453	0.627	1.092	12.669	15.306	1.465	1.114
27	0.448	0.619	1.082	12.579	15.084	1.476	1.103
28	0.443	0.611	1.073	12.496	14.894	1.486	1.094

Pollutant Name: Carbon Dioxide Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	1085.370	1327.776	1844.655	2750.532	2663.091	231.795	1333.155
5	960.385	1175.298	1677.379	2750.532	2663.091	231.795	1199.160
6	905.420	1108.242	1574.281	2645.911	2625.839	224.092	1131.931
8	808.354	989.823	1394.231	2454.561	2562.596	209.917	1013.222
9	765.505	937.549	1315.603	2366.929	2535.755	203.397	960.811
10	726.009	889.365	1243.609	2284.153	2511.622	197.226	912.487
11	689.577	844.918	1177.623	2205.910	2489.894	191.384	867.895
12	655.950	803.894	1117.087	2131.921	2470.304	185.853	826.717
15	569.660	698.623	963.441	1933.145	2422.175	170.953	720.927
23	417.558	513.061	699.108	1627.092	2345.533	141.306	537.069
24	404.353	496.952	676.594	1608.377	2339.424	138.441	521.475
25	392.149	482.064	655.851	1590.637	2333.863	135.734	507.053
26	380.879	468.314	636.755	1573.824	2328.802	133.180	493.726
27	370.483	455.631	619.191	1557.891	2324.199	130.771	481.423
28	360.906	443.948	603.057	1542.799	2320.015	128.502	470.078

Pollutant Name: Sulfur Dioxide Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.011	0.013	0.018	0.027	0.026	0.003	0.013
5	0.009	0.011	0.016	0.027	0.026	0.003	0.012
6	0.009	0.011	0.015	0.026	0.025	0.003	0.011
8	0.008	0.010	0.014	0.024	0.025	0.003	0.010
9	0.007	0.009	0.013	0.023	0.024	0.003	0.009
10	0.007	0.009	0.012	0.022	0.024	0.003	0.009
11	0.007	0.008	0.011	0.021	0.024	0.003	0.008
12	0.006	0.008	0.011	0.021	0.024	0.002	0.008
15	0.006	0.007	0.009	0.019	0.023	0.002	0.007
23	0.004	0.005	0.007	0.016	0.022	0.002	0.005
24	0.004	0.005	0.007	0.015	0.022	0.002	0.005
25	0.004	0.005	0.006	0.015	0.022	0.002	0.005
26	0.004	0.005	0.006	0.015	0.022	0.002	0.005
27	0.004	0.004	0.006	0.015	0.022	0.002	0.005
28	0.004	0.004	0.006	0.015	0.022	0.002	0.005

Pollutant Name: PM10 Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.071	0.128	0.123	1.696	0.776	0.061	0.163
5	0.059	0.107	0.105	1.696	0.776	0.061	0.148
6	0.054	0.098	0.097	1.583	0.725	0.058	0.137
8	0.046	0.083	0.082	1.376	0.637	0.053	0.117
9	0.042	0.076	0.076	1.280	0.598	0.050	0.108
10	0.039	0.071	0.070	1.190	0.562	0.048	0.100
11	0.036	0.065	0.065	1.106	0.529	0.046	0.093
12	0.033	0.061	0.060	1.027	0.499	0.045	0.086
15	0.027	0.049	0.049	0.821	0.421	0.040	0.070
23	0.017	0.030	0.031	0.542	0.286	0.032	0.045
24	0.016	0.029	0.029	0.524	0.274	0.032	0.043
25	0.015	0.027	0.028	0.507	0.263	0.031	0.041
26	0.014	0.026	0.027	0.491	0.253	0.031	0.039
27	0.014	0.025	0.026	0.476	0.244	0.030	0.038
28	0.013	0.024	0.025	0.462	0.235	0.030	0.037

Pollutant Name: PM10 - Tire Wear   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.008	0.008	0.009	0.023	0.009	0.004	0.009
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
6	0.008	0.008	0.009	0.023	0.009	0.004	0.009
8	0.008	0.008	0.009	0.023	0.009	0.004	0.009
9	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
11	0.008	0.008	0.009	0.023	0.009	0.004	0.009
12	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
23	0.008	0.008	0.009	0.023	0.009	0.004	0.009
24	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
26	0.008	0.008	0.009	0.023	0.009	0.004	0.009
27	0.008	0.008	0.009	0.023	0.009	0.004	0.009
28	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Break Wear   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.013	0.013	0.013	0.020	0.013	0.006	0.013
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
6	0.013	0.013	0.013	0.020	0.013	0.006	0.013
8	0.013	0.013	0.013	0.020	0.013	0.006	0.013
9	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
11	0.013	0.013	0.013	0.020	0.013	0.006	0.013
12	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
23	0.013	0.013	0.013	0.020	0.013	0.006	0.013
24	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
26	0.013	0.013	0.013	0.020	0.013	0.006	0.013
27	0.013	0.013	0.013	0.020	0.013	0.006	0.013
28	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	8.062	6.534	4.582	3.337	3.379	27.409	7.201
5	9.109	7.383	5.109	3.337	3.379	27.409	8.088
6	9.660	7.830	5.434	3.636	3.682	28.443	8.574
8	10.817	8.768	6.120	4.289	4.343	30.527	9.594
9	11.420	9.257	6.481	4.643	4.702	31.572	10.127
10	12.040	9.760	6.852	5.016	5.079	32.617	10.673
11	12.674	10.274	7.234	5.406	5.474	33.659	11.232
12	13.321	10.799	7.625	5.814	5.887	34.697	11.803
15	15.333	12.430	8.849	7.137	7.226	37.759	13.577
23	20.899	16.947	12.302	11.192	11.333	45.099	18.489
24	21.580	17.499	12.730	11.724	11.871	45.883	19.090
25	22.250	18.043	13.152	12.253	12.407	46.627	19.681
26	22.907	18.577	13.567	12.778	12.939	47.330	20.261
27	23.549	19.097	13.973	13.297	13.463	47.987	20.827
28	24.174	19.604	14.369	13.806	13.979	48.596	21.377

Pollutant Name: Diesel - mi/gal   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	27.966	29.032	19.689	4.431	3.739	0.000	10.582
5	27.966	29.032	19.689	4.431	3.739	0.000	10.582
6	27.966	29.032	19.689	4.488	3.739	0.000	10.620
8	27.966	29.032	19.689	4.610	3.739	0.000	10.699
9	27.966	29.032	19.689	4.676	3.739	0.000	10.742
10	27.966	29.032	19.689	4.744	3.739	0.000	10.786
11	27.966	29.032	19.689	4.815	3.739	0.000	10.833
12	27.966	29.032	19.689	4.890	3.739	0.000	10.882
15	27.966	29.032	19.689	5.132	3.739	0.000	11.040
23	27.966	29.032	19.689	5.647	3.739	0.000	11.375
24	27.966	29.032	19.689	5.682	3.739	0.000	11.398
25	27.966	29.032	19.689	5.717	3.739	0.000	11.421
26	27.966	29.032	19.689	5.752	3.739	0.000	11.443
27	27.966	29.032	19.689	5.786	3.739	0.000	11.466
28	27.966	29.032	19.689	5.820	3.739	0.000	11.488

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.233	0.196	0.349	1.164	0.354	2.703	0.315
10	0.367	0.315	0.601	1.500	0.489	2.826	0.476
20	0.619	0.539	1.070	2.137	0.741	3.116	0.778
30	0.849	0.744	1.493	2.730	0.972	3.466	1.054
40	1.056	0.929	1.870	3.279	1.182	3.876	1.304
50	1.239	1.095	2.201	3.782	1.369	4.345	1.527
60	1.391	1.234	2.477	4.159	1.514	4.613	1.710
120	1.600	1.409	2.266	2.733	1.098	2.769	1.730
180	0.998	0.910	1.923	2.918	1.170	2.843	1.253
240	1.058	0.965	2.036	3.098	1.240	3.059	1.328
300	1.116	1.018	2.146	3.275	1.308	3.274	1.402
360	1.173	1.071	2.253	3.448	1.374	3.488	1.474
420	1.229	1.122	2.357	3.616	1.439	3.700	1.544
480	1.283	1.173	2.459	3.781	1.501	3.912	1.613
540	1.336	1.222	2.558	3.941	1.562	4.122	1.680
600	1.388	1.270	2.654	4.098	1.621	4.332	1.746
660	1.438	1.317	2.748	4.250	1.679	4.540	1.809
720	1.487	1.363	2.839	4.399	1.734	4.748	1.872

Pollutant Name: Carbon Monoxide   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	1.781	1.725	3.966	10.643	2.637	6.046	2.638
10	3.151	3.120	7.373	16.648	4.356	6.454	4.600
20	5.746	5.767	13.790	27.944	7.585	7.280	8.308
30	8.146	8.222	19.678	38.288	10.535	8.121	11.727
40	10.352	10.486	25.037	47.679	13.207	8.976	14.858
50	12.363	12.559	29.867	56.118	15.600	9.845	17.699
60	14.181	14.440	34.167	63.605	17.714	10.729	20.252
120	18.674	18.532	26.782	34.402	10.241	9.646	20.766
180	10.985	11.293	20.977	37.273	10.900	10.370	14.163
240	11.674	12.022	22.029	39.965	11.528	12.724	15.046
300	12.309	12.690	23.025	42.478	12.125	14.814	15.864
360	12.892	13.298	23.964	44.814	12.691	16.641	16.618
420	13.421	13.844	24.848	46.971	13.227	18.204	17.307

480	13.897	14.329	25.675	48.950	13.731	19.504	17.932
540	14.319	14.754	26.447	50.751	14.205	20.540	18.492
600	14.689	15.118	27.162	52.374	14.648	21.313	18.987
660	15.005	15.420	27.821	53.819	15.059	21.822	19.419
720	15.267	15.662	28.424	55.085	15.440	22.067	19.785

Pollutant Name: Oxides of Nitrogen   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.329	0.500	0.987	0.842	0.430	0.261	0.525
10	0.387	0.568	1.225	1.242	0.643	0.291	0.635
20	0.488	0.691	1.644	1.945	1.016	0.345	0.829
30	0.573	0.792	1.989	2.519	1.321	0.391	0.989
40	0.639	0.873	2.258	2.963	1.556	0.429	1.115
50	0.688	0.933	2.452	3.277	1.723	0.459	1.206
60	0.719	0.972	2.572	3.462	1.820	0.481	1.263
120	0.754	1.035	2.691	3.548	1.865	0.499	1.325
180	0.812	1.111	2.738	3.533	1.857	0.489	1.382
240	0.806	1.102	2.721	3.510	1.846	0.475	1.372
300	0.797	1.090	2.695	3.480	1.832	0.458	1.358
360	0.785	1.073	2.661	3.442	1.813	0.438	1.339
420	0.770	1.053	2.618	3.397	1.791	0.414	1.316
480	0.753	1.028	2.568	3.344	1.765	0.386	1.288
540	0.733	0.998	2.510	3.284	1.735	0.355	1.256
600	0.709	0.965	2.443	3.216	1.701	0.321	1.220
660	0.683	0.927	2.369	3.141	1.664	0.283	1.179
720	0.655	0.885	2.286	3.058	1.623	0.242	1.134

Pollutant Name: Carbon Dioxide   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.043	13.605	16.611	10.237	3.417	27.086	12.969
10	13.678	16.475	21.758	13.708	5.179	29.761	16.172
20	19.246	22.640	32.462	20.565	8.668	34.971	22.912
30	25.211	29.370	43.713	27.310	12.109	39.992	30.096
40	31.575	36.664	55.513	33.942	15.502	44.826	37.725
50	38.337	44.524	67.859	40.462	18.847	49.471	45.799
60	45.496	52.948	80.753	46.868	22.144	53.928	54.318
120	92.229	110.916	159.237	74.984	36.510	74.615	109.040
180	105.612	126.833	183.626	85.262	42.323	76.123	124.909
240	118.657	142.431	207.228	94.934	47.793	77.545	140.355
300	131.366	157.709	230.044	104.000	52.921	78.882	155.378
360	143.738	172.667	252.074	112.460	57.705	80.132	169.977
420	155.773	187.306	273.318	120.315	62.146	81.297	184.153
480	167.471	201.625	293.776	127.564	66.245	82.375	197.906
540	178.833	215.625	313.448	134.207	70.000	83.368	211.235
600	189.857	229.305	332.334	140.244	73.413	84.275	224.141
660	200.545	242.665	350.434	145.676	76.483	85.095	236.623
720	210.896	255.706	367.748	150.502	79.210	85.830	248.682

Pollutant Name: Sulfur Dioxide   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.001	0.001	0.000	0.001	0.000
30	0.000	0.000	0.001	0.001	0.000	0.001	0.000
40	0.000	0.001	0.001	0.001	0.000	0.001	0.001
50	0.001	0.001	0.001	0.001	0.000	0.001	0.001
60	0.001	0.001	0.001	0.002	0.001	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.002	0.002	0.002	0.001	0.001	0.002
300	0.001	0.002	0.003	0.002	0.001	0.001	0.002
360	0.002	0.002	0.003	0.002	0.001	0.001	0.002
420	0.002	0.002	0.003	0.002	0.001	0.001	0.002
480	0.002	0.002	0.003	0.002	0.001	0.001	0.002
540	0.002	0.002	0.003	0.002	0.001	0.001	0.002
600	0.002	0.002	0.004	0.002	0.001	0.001	0.002
660	0.002	0.003	0.004	0.002	0.001	0.001	0.003
720	0.002	0.003	0.004	0.002	0.001	0.001	0.003

Pollutant Name: PM10   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.001	0.000	0.015	0.001
10	0.002	0.003	0.002	0.001	0.001	0.014	0.002
20	0.003	0.005	0.004	0.002	0.001	0.011	0.004
30	0.004	0.007	0.006	0.003	0.002	0.008	0.005
40	0.005	0.009	0.008	0.003	0.002	0.006	0.007
50	0.006	0.011	0.009	0.004	0.002	0.005	0.008
60	0.007	0.013	0.011	0.004	0.003	0.004	0.009
120	0.011	0.019	0.016	0.006	0.004	0.010	0.014
180	0.012	0.021	0.016	0.006	0.004	0.016	0.015
240	0.012	0.022	0.017	0.006	0.004	0.021	0.016
300	0.013	0.023	0.018	0.007	0.004	0.025	0.017
360	0.013	0.024	0.019	0.007	0.004	0.029	0.017
420	0.014	0.025	0.020	0.007	0.004	0.033	0.018
480	0.014	0.026	0.020	0.008	0.004	0.035	0.019
540	0.015	0.027	0.021	0.008	0.005	0.037	0.019
600	0.015	0.027	0.021	0.008	0.005	0.039	0.020
660	0.015	0.028	0.022	0.008	0.005	0.040	0.020
720	0.016	0.028	0.022	0.008	0.005	0.040	0.021

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.049	0.040	0.025	0.011	0.017	0.089	0.041
10	0.091	0.074	0.047	0.021	0.032	0.165	0.075
20	0.155	0.127	0.081	0.035	0.054	0.282	0.129
30	0.199	0.163	0.104	0.046	0.069	0.363	0.165
40	0.216	0.177	0.113	0.049	0.075	0.393	0.179

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San DiegoCounty Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.009	0.008	0.005	0.001	0.000	0.009	0.008

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.001	0.001	0.000	0.000	0.000	0.001	0.001

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.007	0.006	0.004	0.001	0.000	0.007	0.006

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.001	0.000	0.000	0.000	0.000	0.001	0.001

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL   Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.467	0.346	0.137	0.039	0.001	0.009	1.000
%TRIP	0.454	0.305	0.181	0.049	0.000	0.011	1.000
%VEH	0.490	0.327	0.118	0.027	0.000	0.037	1.000

Title   : San Diego County 2008
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/06 21:46:26
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season   : Annual
Area   : San Diego
****
Year: 2008 -- Model Years 1965 to 2008 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.033	0.332	0.258	0.233	0.111	0.093	0.176
2	0.037	0.174	0.136	0.128	0.063	0.128	0.102
3	0.041	0.124	0.097	0.093	0.047	0.146	0.080
4	0.044	0.100	0.078	0.077	0.039	0.156	0.070
5	0.047	0.086	0.068	0.066	0.035	0.163	0.065
10	0.051	0.061	0.048	0.047	0.026	0.181	0.055
15	0.053	0.055	0.044	0.040	0.024	0.189	0.053
20	0.053	0.055	0.044	0.038	0.023	0.195	0.053
25	0.054	0.057	0.046	0.036	0.023	0.200	0.054
30	0.054	0.056	0.045	0.036	0.022	0.199	0.054
35	0.053	0.056	0.045	0.036	0.022	0.199	0.054
40	0.053	0.056	0.045	0.036	0.022	0.198	0.054
45	0.053	0.055	0.045	0.036	0.022	0.197	0.053
50	0.052	0.055	0.044	0.036	0.022	0.194	0.053
55	0.051	0.055	0.044	0.036	0.022	0.189	0.052
60	0.050	0.054	0.044	0.035	0.022	0.186	0.051

```
Title    : San Diego County 2015
Version  : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season   : Annual
Area     : San Diego
*********************************************************************************
     Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
     Emfac2007 Emission Factors: V2.3 Nov 1 2006
```

San Diego County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.443	0.412	0.654	4.446	2.815	5.688	0.675
5	0.370	0.347	0.576	4.446	2.815	5.688	0.608
6	0.339	0.319	0.530	4.011	2.615	5.374	0.557
7	0.312	0.295	0.489	3.604	2.434	5.087	0.511
8	0.287	0.272	0.452	3.226	2.269	4.826	0.468
9	0.265	0.252	0.419	2.875	2.118	4.587	0.430
10	0.245	0.234	0.389	2.552	1.980	4.368	0.395
11	0.227	0.217	0.362	2.256	1.854	4.168	0.363
12	0.211	0.202	0.337	1.987	1.739	3.986	0.334
14	0.183	0.177	0.294	1.529	1.537	3.665	0.285
15	0.171	0.166	0.276	1.338	1.448	3.525	0.264
19	0.133	0.130	0.217	0.844	1.159	3.076	0.201
20	0.125	0.123	0.205	0.808	1.101	2.988	0.191
22	0.112	0.111	0.184	0.743	0.997	2.835	0.174
23	0.107	0.106	0.175	0.713	0.951	2.770	0.166
24	0.102	0.101	0.167	0.684	0.908	2.711	0.159
25	0.097	0.096	0.160	0.657	0.869	2.659	0.153
26	0.092	0.092	0.153	0.632	0.833	2.613	0.147
27	0.089	0.088	0.146	0.607	0.799	2.572	0.142
28	0.085	0.085	0.140	0.584	0.768	2.537	0.137

Pollutant Name: Carbon Monoxide   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	3.527	4.422	6.074	14.672	18.470	31.790	4.898
5	3.343	4.173	5.762	14.672	18.470	31.790	4.685
6	3.257	4.057	5.508	13.537	16.838	30.570	4.512
7	3.176	3.947	5.274	12.498	15.386	29.450	4.351
8	3.099	3.842	5.059	11.547	14.093	28.423	4.200
9	3.025	3.743	4.861	10.677	12.939	27.479	4.060
10	2.954	3.649	4.677	9.881	11.907	26.614	3.928
11	2.886	3.559	4.507	9.153	10.983	25.821	3.805
12	2.822	3.473	4.349	8.489	10.154	25.095	3.690
14	2.700	3.313	4.066	7.333	8.741	23.826	3.480
15	2.643	3.238	3.938	6.834	8.138	23.274	3.384
19	2.435	2.969	3.505	5.293	6.260	21.552	3.056
20	2.388	2.908	3.412	5.063	5.896	21.231	2.988
22	2.298	2.794	3.244	4.654	5.269	20.705	2.862

23	2.256	2.740	3.167	4.473	4.998	20.499	2.804
24	2.215	2.689	3.094	4.305	4.752	20.329	2.748
25	2.176	2.639	3.026	4.149	4.528	20.194	2.696
26	2.137	2.591	2.961	4.005	4.325	20.095	2.646
27	2.101	2.545	2.900	3.872	4.141	20.030	2.598
28	2.065	2.501	2.842	3.748	3.974	20.001	2.553

Pollutant Name: Oxides of Nitrogen   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.423	0.616	1.093	16.074	28.914	1.392	1.260
5	0.398	0.578	1.051	16.074	28.914	1.392	1.229
6	0.387	0.559	1.018	15.131	27.331	1.383	1.173
7	0.376	0.542	0.988	14.247	25.887	1.376	1.120
8	0.366	0.526	0.959	13.422	24.570	1.369	1.070
9	0.356	0.511	0.933	12.655	23.367	1.363	1.024
10	0.347	0.497	0.908	11.945	22.269	1.357	0.981
11	0.338	0.483	0.885	11.292	21.265	1.352	0.942
12	0.330	0.471	0.863	10.696	20.348	1.348	0.905
14	0.315	0.447	0.824	9.671	18.743	1.341	0.841
15	0.308	0.437	0.807	9.242	18.044	1.339	0.813
19	0.284	0.400	0.748	8.046	15.809	1.334	0.730
20	0.279	0.392	0.736	7.922	15.371	1.334	0.718
22	0.269	0.378	0.714	7.693	14.617	1.336	0.695
23	0.265	0.372	0.705	7.588	14.296	1.337	0.685
24	0.260	0.365	0.696	7.489	14.010	1.339	0.675
25	0.256	0.360	0.688	7.395	13.756	1.341	0.666
26	0.253	0.354	0.680	7.307	13.532	1.344	0.658
27	0.249	0.349	0.674	7.225	13.338	1.346	0.650
28	0.246	0.345	0.668	7.148	13.172	1.350	0.643

Pollutant Name: Carbon Dioxide   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	1072.804	1336.369	1854.606	2797.864	2614.283	256.967	1326.588
5	949.181	1182.620	1687.636	2797.864	2614.284	256.967	1193.603
6	894.816	1115.006	1583.377	2691.886	2570.862	247.498	1126.707
7	844.821	1052.828	1488.253	2591.907	2531.994	238.640	1065.184
8	798.808	995.602	1401.364	2497.470	2497.148	230.351	1008.548
9	756.426	942.893	1321.907	2408.183	2465.862	222.593	956.362
10	717.360	894.307	1249.170	2323.696	2437.733	215.329	908.236
11	681.325	849.491	1182.517	2243.709	2412.407	208.528	863.817
12	648.065	808.125	1121.381	2167.955	2389.574	202.159	822.789
14	588.960	734.617	1013.688	2028.246	2350.332	190.612	749.797
15	562.716	701.978	966.272	1963.904	2333.474	185.386	717.344
19	475.955	594.075	811.384	1736.954	2280.371	167.659	609.722
20	458.143	571.922	779.957	1713.464	2269.993	163.936	588.611
22	426.393	532.434	724.270	1670.075	2251.961	157.243	550.961
23	412.271	514.871	699.645	1650.032	2244.141	154.248	534.204
24	399.211	498.628	676.949	1631.008	2237.021	151.474	518.697
25	387.140	483.616	656.043	1612.948	2230.540	148.911	504.354
26	375.993	469.752	636.799	1595.806	2224.641	146.552	491.099
27	365.710	456.963	619.100	1579.539	2219.274	144.387	478.859
28	356.237	445.183	602.844	1564.110	2214.398	142.411	467.573

Pollutant Name: Sulfur Dioxide   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.010	0.013	0.018	0.027	0.025	0.003	0.013
5	0.009	0.011	0.016	0.027	0.025	0.003	0.012
6	0.009	0.011	0.015	0.026	0.025	0.003	0.011
7	0.008	0.010	0.014	0.025	0.024	0.003	0.010
8	0.008	0.010	0.014	0.024	0.024	0.003	0.010
9	0.007	0.009	0.013	0.023	0.024	0.003	0.009
10	0.007	0.009	0.012	0.022	0.023	0.003	0.009
11	0.007	0.008	0.011	0.022	0.023	0.003	0.008
12	0.006	0.008	0.011	0.021	0.023	0.002	0.008
14	0.006	0.007	0.010	0.019	0.023	0.002	0.007
15	0.005	0.007	0.009	0.019	0.022	0.002	0.007
19	0.005	0.006	0.008	0.017	0.022	0.002	0.006
20	0.004	0.006	0.008	0.016	0.022	0.002	0.006
22	0.004	0.005	0.007	0.016	0.022	0.002	0.005
23	0.004	0.005	0.007	0.016	0.021	0.002	0.005
24	0.004	0.005	0.007	0.016	0.021	0.002	0.005
25	0.004	0.005	0.006	0.015	0.021	0.002	0.005
26	0.004	0.005	0.006	0.015	0.021	0.002	0.005
27	0.004	0.004	0.006	0.015	0.021	0.002	0.005
28	0.003	0.004	0.006	0.015	0.021	0.002	0.005

Pollutant Name: PM10   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.072	0.153	0.159	0.758	0.696	0.039	0.139
5	0.059	0.127	0.135	0.758	0.696	0.039	0.121
6	0.054	0.116	0.123	0.713	0.650	0.037	0.111
7	0.050	0.107	0.113	0.670	0.609	0.035	0.103
8	0.046	0.098	0.104	0.629	0.571	0.033	0.095
9	0.042	0.090	0.096	0.591	0.536	0.032	0.088
10	0.039	0.083	0.089	0.555	0.503	0.030	0.082
11	0.036	0.077	0.082	0.521	0.474	0.029	0.076
12	0.033	0.071	0.076	0.489	0.447	0.028	0.070
14	0.028	0.061	0.066	0.431	0.399	0.026	0.061
15	0.026	0.057	0.061	0.406	0.377	0.025	0.057
19	0.020	0.044	0.048	0.323	0.307	0.022	0.044
20	0.019	0.041	0.045	0.313	0.293	0.022	0.042
22	0.017	0.037	0.040	0.294	0.268	0.021	0.038
23	0.016	0.035	0.038	0.286	0.256	0.020	0.037
24	0.015	0.033	0.036	0.278	0.246	0.020	0.035
25	0.015	0.032	0.034	0.270	0.236	0.019	0.034
26	0.014	0.030	0.033	0.263	0.227	0.019	0.032
27	0.013	0.029	0.031	0.257	0.218	0.019	0.031
28	0.013	0.028	0.030	0.251	0.210	0.019	0.030

Pollutant Name: PM10 - Tire Wear   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.008	0.008	0.009	0.023	0.009	0.004	0.009
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
6	0.008	0.008	0.009	0.023	0.009	0.004	0.009
7	0.008	0.008	0.009	0.023	0.009	0.004	0.009
8	0.008	0.008	0.009	0.023	0.009	0.004	0.009
9	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
11	0.008	0.008	0.009	0.023	0.009	0.004	0.009
12	0.008	0.008	0.009	0.023	0.009	0.004	0.009
14	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
19	0.008	0.008	0.009	0.023	0.009	0.004	0.009
20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
22	0.008	0.008	0.009	0.023	0.009	0.004	0.009
23	0.008	0.008	0.009	0.023	0.009	0.004	0.009
24	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
26	0.008	0.008	0.009	0.023	0.009	0.004	0.009
27	0.008	0.008	0.009	0.023	0.009	0.004	0.009
28	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Break Wear   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.013	0.013	0.013	0.020	0.013	0.006	0.013
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
6	0.013	0.013	0.013	0.020	0.013	0.006	0.013
7	0.013	0.013	0.013	0.020	0.013	0.006	0.013
8	0.013	0.013	0.013	0.020	0.013	0.006	0.013
9	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
11	0.013	0.013	0.013	0.020	0.013	0.006	0.013
12	0.013	0.013	0.013	0.020	0.013	0.006	0.013
14	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
19	0.013	0.013	0.013	0.020	0.013	0.006	0.013
20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
22	0.013	0.013	0.013	0.020	0.013	0.006	0.013
23	0.013	0.013	0.013	0.020	0.013	0.006	0.013
24	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
26	0.013	0.013	0.013	0.020	0.013	0.006	0.013
27	0.013	0.013	0.013	0.020	0.013	0.006	0.013
28	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	8.204	6.554	4.597	3.443	3.437	27.393	7.323
5	9.270	7.406	5.123	3.443	3.437	27.393	8.227
6	9.832	7.855	5.449	3.752	3.746	28.482	8.723
7	10.413	8.319	5.788	4.079	4.073	29.575	9.235
8	11.011	8.797	6.139	4.426	4.419	30.672	9.763
9	11.627	9.289	6.502	4.791	4.784	31.769	10.306
10	12.258	9.793	6.875	5.175	5.167	32.864	10.863
11	12.905	10.310	7.259	5.578	5.569	33.955	11.433
12	13.565	10.838	7.653	5.999	5.989	35.038	12.016
14	14.923	11.923	8.466	6.892	6.881	37.171	13.213
15	15.617	12.477	8.885	7.363	7.352	38.214	13.825
19	18.456	14.745	10.611	9.384	9.370	42.169	16.328
20	19.171	15.317	11.050	9.915	9.901	43.087	16.958
22	20.595	16.455	11.927	10.998	10.982	44.818	18.213
23	21.299	17.017	12.362	11.545	11.529	45.625	18.833
24	21.994	17.573	12.793	12.093	12.076	46.389	19.446
25	22.678	18.120	13.219	12.638	12.621	47.106	20.048
26	23.350	18.656	13.637	13.179	13.161	47.775	20.639
27	24.005	19.180	14.047	13.714	13.695	48.392	21.216
28	24.642	19.689	14.445	14.238	14.219	48.955	21.777

Pollutant Name: Diesel - mi/gal   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	28.342	29.059	19.650	4.337	3.817	0.000	8.710
5	28.342	29.059	19.650	4.337	3.817	0.000	8.710
6	28.342	29.059	19.650	4.397	3.817	0.000	8.754
7	28.342	29.059	19.650	4.459	3.817	0.000	8.799
8	28.342	29.059	19.650	4.524	3.817	0.000	8.847
9	28.342	29.059	19.650	4.592	3.817	0.000	8.896
10	28.342	29.059	19.650	4.663	3.817	0.000	8.948
11	28.342	29.059	19.650	4.738	3.817	0.000	9.003
12	28.342	29.059	19.650	4.815	3.817	0.000	9.059
14	28.342	29.059	19.650	4.980	3.817	0.000	9.180
15	28.342	29.059	19.650	5.068	3.817	0.000	9.244
19	28.342	29.059	19.650	5.456	3.817	0.000	9.527
20	28.342	29.059	19.650	5.493	3.817	0.000	9.554
22	28.342	29.059	19.650	5.567	3.817	0.000	9.608
23	28.342	29.059	19.650	5.604	3.817	0.000	9.635
24	28.342	29.059	19.650	5.640	3.817	0.000	9.662
25	28.342	29.059	19.650	5.677	3.817	0.000	9.689
26	28.342	29.059	19.650	5.713	3.817	0.000	9.715
27	28.342	29.059	19.650	5.748	3.817	0.000	9.741
28	28.342	29.059	19.650	5.784	3.817	0.000	9.767

Title   : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season   : Annual
Area   : San Diego
****
Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.090	0.086	0.195	0.423	0.242	1.810	0.143
10	0.166	0.156	0.358	0.663	0.405	2.022	0.242
20	0.307	0.287	0.663	1.107	0.705	2.451	0.428
30	0.435	0.407	0.941	1.507	0.974	2.887	0.597
40	0.549	0.516	1.190	1.861	1.210	3.332	0.749
50	0.650	0.614	1.413	2.169	1.413	3.784	0.885
60	0.736	0.699	1.605	2.414	1.577	4.083	1.000
120	0.928	0.883	1.710	1.677	1.183	3.167	1.117
180	0.547	0.545	1.367	1.784	1.257	2.752	0.779
240	0.579	0.578	1.449	1.887	1.329	2.941	0.825
300	0.610	0.610	1.528	1.987	1.398	3.128	0.871
360	0.641	0.641	1.607	2.084	1.466	3.311	0.915
420	0.671	0.673	1.683	2.179	1.531	3.493	0.959
480	0.701	0.703	1.758	2.270	1.594	3.672	1.001
540	0.729	0.733	1.832	2.358	1.654	3.848	1.043
600	0.757	0.762	1.904	2.443	1.713	4.022	1.084
660	0.785	0.791	1.974	2.526	1.769	4.193	1.124
720	0.811	0.820	2.043	2.605	1.823	4.362	1.163

Pollutant Name: Carbon Monoxide   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.930	0.989	2.314	5.562	2.291	4.783	1.464
10	1.787	1.896	4.424	10.050	4.219	5.938	2.741
20	3.413	3.622	8.419	18.466	7.833	8.142	5.159
30	4.921	5.234	12.114	26.134	11.124	10.202	7.397
40	6.312	6.731	15.510	33.056	14.093	12.121	9.455
50	7.586	8.113	18.605	39.230	16.740	13.896	11.333
60	8.742	9.379	21.401	44.657	19.064	15.530	13.030
120	12.139	12.805	20.631	23.768	10.751	17.774	14.500
180	6.770	7.494	14.066	24.839	11.185	11.683	9.235
240	7.181	8.006	14.895	25.890	11.616	13.331	9.796
300	7.558	8.469	15.659	26.921	12.044	14.815	10.313
360	7.900	8.883	16.357	27.933	12.469	16.137	10.785
420	8.208	9.248	16.990	28.925	12.890	17.296	11.211
480	8.482	9.564	17.558	29.897	13.308	18.291	11.592
540	8.722	9.831	18.060	30.849	13.723	19.124	11.929

600	8.927	10.049	18.496	31.782	14.134	19.793	12.220
660	9.099	10.219	18.867	32.695	14.543	20.300	12.466
720	9.236	10.339	19.173	33.588	14.948	20.643	12.668

Pollutant Name: Oxides of Nitrogen   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.199	0.351	0.944	0.596	0.518	0.211	0.399
10	0.228	0.387	1.088	0.892	0.779	0.250	0.464
20	0.279	0.453	1.342	1.414	1.237	0.319	0.579
30	0.321	0.508	1.553	1.839	1.611	0.377	0.675
40	0.354	0.552	1.720	2.167	1.899	0.424	0.750
50	0.379	0.585	1.844	2.399	2.103	0.458	0.805
60	0.395	0.608	1.923	2.535	2.222	0.482	0.841
120	0.418	0.653	2.042	2.597	2.276	0.494	0.889
180	0.452	0.704	2.083	2.587	2.268	0.490	0.927
240	0.449	0.698	2.068	2.572	2.255	0.480	0.921
300	0.444	0.690	2.047	2.552	2.237	0.468	0.911
360	0.437	0.679	2.017	2.526	2.216	0.452	0.898
420	0.429	0.666	1.981	2.496	2.189	0.435	0.882
480	0.419	0.649	1.936	2.460	2.158	0.414	0.862
540	0.408	0.629	1.884	2.419	2.123	0.391	0.839
600	0.395	0.607	1.825	2.373	2.083	0.366	0.813
660	0.380	0.581	1.758	2.322	2.039	0.337	0.784
720	0.363	0.553	1.684	2.265	1.991	0.307	0.751

Pollutant Name: Carbon Dioxide   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.396	14.239	18.834	4.560	2.570	18.677	13.358
10	13.318	16.577	22.800	7.530	4.580	21.067	15.832
20	17.586	21.787	31.376	13.413	8.564	25.743	21.249
30	22.417	27.708	40.809	19.221	12.501	30.280	27.289
40	27.814	34.340	51.099	24.955	16.390	34.677	33.952
50	33.774	41.685	62.245	30.615	20.231	38.936	41.239
60	40.299	49.741	74.248	36.201	24.025	43.056	49.150
120	89.114	110.477	158.247	60.467	40.477	61.819	106.445
180	101.649	125.959	181.248	70.661	47.550	65.010	121.556
240	114.040	141.275	203.818	80.254	54.206	68.015	136.440
300	126.284	156.425	225.955	89.245	60.444	70.833	151.098
360	138.383	171.408	247.660	97.635	66.265	73.466	165.530
420	150.337	186.224	268.933	105.423	71.669	75.912	179.736
480	162.144	200.874	289.775	112.609	76.655	78.172	193.716
540	173.806	215.357	310.184	119.195	81.224	80.245	207.469
600	185.323	229.674	330.161	125.178	85.375	82.132	220.996
660	196.693	243.824	349.705	130.561	89.109	83.833	234.296
720	207.918	257.807	368.818	135.341	92.425	85.348	247.370

Pollutant Name: Sulfur Dioxide   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.001	0.001	0.000	0.001	0.000
40	0.000	0.000	0.001	0.001	0.000	0.001	0.000
50	0.000	0.001	0.001	0.001	0.000	0.001	0.001
60	0.001	0.001	0.001	0.001	0.001	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002
420	0.002	0.002	0.003	0.002	0.001	0.001	0.002
480	0.002	0.002	0.003	0.002	0.001	0.001	0.002
540	0.002	0.002	0.003	0.002	0.001	0.001	0.002
600	0.002	0.002	0.004	0.002	0.001	0.001	0.002
660	0.002	0.003	0.004	0.002	0.001	0.001	0.002
720	0.002	0.003	0.004	0.002	0.001	0.001	0.003

Pollutant Name: PM10   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.001	0.000	0.010	0.001
10	0.001	0.003	0.002	0.001	0.001	0.009	0.002
20	0.003	0.006	0.005	0.002	0.001	0.007	0.004
30	0.004	0.008	0.007	0.002	0.002	0.006	0.006
40	0.005	0.010	0.009	0.003	0.002	0.004	0.007
50	0.006	0.013	0.011	0.003	0.003	0.004	0.009
60	0.007	0.015	0.012	0.004	0.003	0.003	0.010
120	0.011	0.023	0.019	0.005	0.004	0.008	0.016
180	0.012	0.025	0.021	0.006	0.004	0.011	0.017
240	0.013	0.027	0.022	0.006	0.004	0.015	0.019
300	0.014	0.029	0.024	0.006	0.005	0.017	0.020
360	0.014	0.031	0.025	0.006	0.005	0.020	0.021
420	0.015	0.032	0.026	0.006	0.005	0.022	0.022
480	0.016	0.033	0.027	0.007	0.005	0.024	0.023
540	0.016	0.034	0.028	0.007	0.005	0.025	0.023
600	0.016	0.035	0.028	0.007	0.005	0.026	0.024
660	0.016	0.035	0.029	0.007	0.005	0.027	0.024
720	0.017	0.035	0.029	0.007	0.006	0.027	0.024

Title   : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season   : Annual
Area   : San Diego

****

Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.043	0.047	0.030	0.005	0.017	0.072	0.040
10	0.079	0.087	0.056	0.010	0.032	0.132	0.074
20	0.134	0.148	0.096	0.017	0.054	0.226	0.127
30	0.171	0.190	0.123	0.022	0.069	0.291	0.162
40	0.185	0.206	0.133	0.024	0.074	0.315	0.176

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title   : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season   : Annual
Area   : San Diego

****

Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.010	0.011	0.009	0.001	0.000	0.011	0.010

Title : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season : Annual
Area : San Diego
****
Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.001	0.001	0.001	0.000	0.000	0.001	0.001

Title : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season : Annual
Area : San Diego
****
Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.008	0.009	0.007	0.000	0.000	0.009	0.008

Title   : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season   : Annual
Area   : San Diego
****
Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.001	0.001	0.001	0.000	0.000	0.001	0.001

Title   : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season   : Annual
Area   : San Diego
****
Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL   Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.483	0.337	0.129	0.041	0.001	0.010	1.000
%TRIP	0.455	0.304	0.181	0.048	0.000	0.011	1.000
%VEH	0.490	0.328	0.118	0.027	0.000	0.037	1.000

Title   : San Diego County 2015
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/06/30 12:39:08
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season   : Annual
Area   : San Diego
****
Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.017	0.359	0.296	0.241	0.168	0.017	0.177
2	0.017	0.184	0.153	0.126	0.087	0.053	0.095
3	0.019	0.128	0.107	0.088	0.060	0.072	0.070
4	0.021	0.101	0.086	0.069	0.048	0.083	0.059
5	0.023	0.086	0.074	0.058	0.040	0.090	0.053
10	0.026	0.057	0.050	0.036	0.026	0.105	0.041
15	0.027	0.049	0.044	0.029	0.021	0.110	0.038
20	0.028	0.046	0.042	0.026	0.020	0.112	0.037
25	0.028	0.046	0.041	0.024	0.019	0.114	0.036
30	0.028	0.046	0.041	0.024	0.019	0.113	0.036
35	0.028	0.045	0.041	0.024	0.019	0.112	0.036
40	0.028	0.045	0.041	0.024	0.019	0.112	0.036
45	0.028	0.045	0.041	0.024	0.019	0.111	0.036
50	0.027	0.045	0.040	0.023	0.019	0.110	0.035
55	0.027	0.044	0.040	0.023	0.019	0.109	0.035
60	0.027	0.044	0.040	0.023	0.019	0.108	0.035

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.256	0.167	0.227	2.010	1.812	5.383	0.340
5	0.212	0.139	0.195	2.010	1.812	5.383	0.305
6	0.194	0.127	0.179	1.809	1.687	5.074	0.280
7	0.177	0.117	0.165	1.622	1.572	4.793	0.256
8	0.163	0.107	0.152	1.448	1.467	4.537	0.235
9	0.149	0.099	0.140	1.287	1.372	4.303	0.216
10	0.138	0.091	0.130	1.139	1.284	4.090	0.198
11	0.127	0.084	0.120	1.004	1.204	3.895	0.183
12	0.117	0.078	0.112	0.882	1.131	3.717	0.168
14	0.101	0.067	0.097	0.676	1.002	3.405	0.144
15	0.094	0.063	0.091	0.592	0.946	3.269	0.134
19	0.072	0.048	0.071	0.385	0.760	2.834	0.103
20	0.068	0.046	0.067	0.373	0.723	2.748	0.098
22	0.060	0.041	0.060	0.351	0.656	2.600	0.090
23	0.057	0.039	0.057	0.340	0.626	2.536	0.086
24	0.054	0.037	0.054	0.330	0.599	2.479	0.083
25	0.052	0.035	0.051	0.320	0.574	2.428	0.079
26	0.049	0.033	0.049	0.310	0.550	2.383	0.077
27	0.047	0.032	0.047	0.301	0.528	2.343	0.074
28	0.045	0.030	0.045	0.292	0.508	2.308	0.072

Pollutant Name: Carbon Monoxide   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	1.608	1.798	2.370	6.234	11.626	26.393	2.195
5	1.547	1.727	2.292	6.234	11.626	26.393	2.132
6	1.517	1.693	2.226	5.709	10.599	25.448	2.067
7	1.489	1.660	2.163	5.226	9.685	24.578	2.006
8	1.461	1.628	2.104	4.782	8.870	23.776	1.948
9	1.434	1.596	2.049	4.376	8.143	23.037	1.894
10	1.408	1.566	1.996	4.003	7.494	22.355	1.842
11	1.382	1.536	1.946	3.664	6.912	21.728	1.794
12	1.357	1.507	1.899	3.356	6.390	21.150	1.748
14	1.308	1.451	1.810	2.829	5.500	20.132	1.663
15	1.285	1.425	1.769	2.607	5.121	19.685	1.624
19	1.197	1.325	1.622	1.971	3.938	18.259	1.490
20	1.177	1.302	1.589	1.899	3.710	17.984	1.462
22	1.137	1.257	1.526	1.771	3.315	17.524	1.410

23	1.118	1.235	1.497	1.715	3.144	17.336	1.385
24	1.099	1.214	1.468	1.663	2.989	17.175	1.362
25	1.081	1.194	1.441	1.616	2.848	17.041	1.339
26	1.063	1.174	1.414	1.572	2.721	16.933	1.317
27	1.046	1.154	1.389	1.533	2.605	16.852	1.297
28	1.029	1.135	1.364	1.496	2.500	16.796	1.277

Pollutant Name: Oxides of Nitrogen   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.230	0.212	0.375	7.901	18.358	1.445	0.573
5	0.217	0.200	0.361	7.901	18.358	1.445	0.561
6	0.211	0.194	0.350	7.480	17.368	1.430	0.537
7	0.206	0.188	0.339	7.083	16.466	1.417	0.514
8	0.200	0.183	0.330	6.707	15.643	1.404	0.493
9	0.195	0.178	0.321	6.354	14.891	1.392	0.473
10	0.190	0.173	0.312	6.023	14.205	1.381	0.454
11	0.185	0.168	0.304	5.714	13.579	1.371	0.436
12	0.181	0.164	0.297	5.427	13.006	1.362	0.420
14	0.173	0.156	0.283	4.917	12.005	1.346	0.390
15	0.169	0.153	0.277	4.694	11.569	1.339	0.377
19	0.155	0.140	0.257	3.991	10.178	1.318	0.335
20	0.153	0.137	0.252	3.909	9.906	1.315	0.329
22	0.147	0.132	0.245	3.754	9.438	1.309	0.317
23	0.145	0.130	0.241	3.681	9.240	1.307	0.311
24	0.142	0.128	0.238	3.611	9.062	1.305	0.306
25	0.140	0.126	0.235	3.545	8.906	1.304	0.301
26	0.138	0.124	0.232	3.481	8.768	1.304	0.296
27	0.136	0.122	0.230	3.421	8.649	1.304	0.292
28	0.134	0.120	0.228	3.363	8.547	1.305	0.288

Pollutant Name: Carbon Dioxide   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	1068.007	1344.362	1868.966	2744.082	2493.776	266.244	1321.302
5	944.890	1189.427	1701.828	2744.082	2493.776	266.244	1187.933
6	890.747	1121.290	1596.048	2640.397	2431.203	256.109	1121.026
7	840.956	1058.632	1499.562	2542.751	2375.190	246.659	1059.512
8	795.131	1000.964	1411.449	2450.671	2324.975	237.845	1002.901
9	752.923	947.848	1330.893	2363.745	2279.890	229.622	950.755
10	714.018	898.887	1257.167	2281.613	2239.353	221.949	902.680
11	678.130	853.725	1189.621	2203.961	2202.856	214.789	858.322
12	645.006	812.040	1127.680	2130.512	2169.952	208.108	817.362
14	586.143	737.964	1018.600	1995.286	2113.401	196.061	744.524
15	560.006	705.072	970.586	1933.108	2089.108	190.641	712.155
19	473.601	596.336	813.811	1714.305	2012.582	172.448	604.890
20	455.861	574.012	782.014	1691.262	1997.626	168.677	583.754
22	424.241	534.219	725.684	1648.792	1971.642	161.956	546.071
23	410.177	516.521	700.779	1629.214	1960.372	158.981	529.304
24	397.170	500.153	677.829	1610.656	1950.112	156.247	513.791
25	385.148	485.024	656.690	1593.062	1940.771	153.744	499.446
26	374.047	471.053	637.234	1576.382	1932.270	151.463	486.190
27	363.806	458.166	619.343	1560.573	1924.537	149.396	473.955
28	354.373	446.295	602.911	1545.594	1917.510	147.536	462.674

Pollutant Name: Sulfur Dioxide   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.010	0.013	0.018	0.026	0.024	0.003	0.013
5	0.009	0.011	0.016	0.026	0.024	0.003	0.011
6	0.009	0.011	0.015	0.025	0.023	0.003	0.011
7	0.008	0.010	0.014	0.024	0.023	0.003	0.010
8	0.008	0.010	0.014	0.023	0.022	0.003	0.010
9	0.007	0.009	0.013	0.023	0.022	0.003	0.009
10	0.007	0.009	0.012	0.022	0.021	0.003	0.009
11	0.007	0.008	0.011	0.021	0.021	0.003	0.008
12	0.006	0.008	0.011	0.020	0.021	0.002	0.008
14	0.006	0.007	0.010	0.019	0.020	0.002	0.007
15	0.005	0.007	0.009	0.018	0.020	0.002	0.007
19	0.005	0.006	0.008	0.016	0.019	0.002	0.006
20	0.004	0.006	0.008	0.016	0.019	0.002	0.006
22	0.004	0.005	0.007	0.016	0.019	0.002	0.005
23	0.004	0.005	0.007	0.016	0.019	0.002	0.005
24	0.004	0.005	0.007	0.015	0.019	0.002	0.005
25	0.004	0.005	0.006	0.015	0.019	0.002	0.005
26	0.004	0.005	0.006	0.015	0.018	0.002	0.005
27	0.004	0.004	0.006	0.015	0.018	0.002	0.005
28	0.003	0.004	0.006	0.015	0.018	0.002	0.004

Pollutant Name: PM10   Temperature: 48F   Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.073	0.160	0.170	0.277	0.496	0.030	0.123
5	0.061	0.133	0.142	0.277	0.496	0.030	0.104
6	0.055	0.121	0.130	0.266	0.464	0.029	0.095
7	0.051	0.111	0.119	0.256	0.434	0.027	0.088
8	0.047	0.101	0.109	0.247	0.406	0.026	0.081
9	0.043	0.093	0.101	0.238	0.381	0.025	0.075
10	0.039	0.086	0.093	0.229	0.358	0.024	0.069
11	0.036	0.079	0.086	0.221	0.337	0.023	0.064
12	0.034	0.073	0.079	0.214	0.318	0.022	0.060
14	0.029	0.063	0.068	0.200	0.283	0.020	0.052
15	0.027	0.059	0.064	0.193	0.268	0.019	0.049
19	0.021	0.045	0.049	0.170	0.218	0.017	0.038
20	0.019	0.042	0.046	0.166	0.208	0.017	0.036
22	0.017	0.038	0.041	0.159	0.189	0.016	0.033
23	0.016	0.036	0.039	0.156	0.181	0.016	0.031
24	0.015	0.034	0.037	0.153	0.174	0.015	0.030
25	0.015	0.032	0.035	0.150	0.167	0.015	0.028
26	0.014	0.031	0.033	0.148	0.160	0.015	0.027
27	0.013	0.029	0.032	0.146	0.154	0.015	0.026
28	0.013	0.028	0.030	0.144	0.149	0.014	0.025

Pollutant Name: PM10 - Tire Wear   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.008	0.008	0.009	0.023	0.009	0.004	0.009
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
6	0.008	0.008	0.009	0.023	0.009	0.004	0.009
7	0.008	0.008	0.009	0.023	0.009	0.004	0.009
8	0.008	0.008	0.009	0.023	0.009	0.004	0.009
9	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
11	0.008	0.008	0.009	0.023	0.009	0.004	0.009
12	0.008	0.008	0.009	0.023	0.009	0.004	0.009
14	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
19	0.008	0.008	0.009	0.023	0.009	0.004	0.009
20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
22	0.008	0.008	0.009	0.023	0.009	0.004	0.009
23	0.008	0.008	0.009	0.023	0.009	0.004	0.009
24	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
26	0.008	0.008	0.009	0.023	0.009	0.004	0.009
27	0.008	0.008	0.009	0.023	0.009	0.004	0.009
28	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Break Wear   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	0.013	0.013	0.013	0.020	0.013	0.006	0.013
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
6	0.013	0.013	0.013	0.020	0.013	0.006	0.013
7	0.013	0.013	0.013	0.020	0.013	0.006	0.013
8	0.013	0.013	0.013	0.020	0.013	0.006	0.013
9	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
11	0.013	0.013	0.013	0.020	0.013	0.006	0.013
12	0.013	0.013	0.013	0.020	0.013	0.006	0.013
14	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
19	0.013	0.013	0.013	0.020	0.013	0.006	0.013
20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
22	0.013	0.013	0.013	0.020	0.013	0.006	0.013
23	0.013	0.013	0.013	0.020	0.013	0.006	0.013
24	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
26	0.013	0.013	0.013	0.020	0.013	0.006	0.013
27	0.013	0.013	0.013	0.020	0.013	0.006	0.013
28	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal   Temperature: 48F Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	8.271	6.570	4.613	3.512	3.484	27.395	7.369
5	9.347	7.425	5.137	3.512	3.484	27.395	8.279
6	9.915	7.876	5.466	3.827	3.797	28.503	8.779
7	10.501	8.341	5.807	4.161	4.128	29.617	9.296
8	11.105	8.821	6.160	4.515	4.479	30.733	9.828
9	11.727	9.315	6.524	4.887	4.848	31.850	10.376
10	12.365	9.822	6.900	5.279	5.237	32.964	10.938
11	13.018	10.341	7.286	5.690	5.644	34.072	11.513
12	13.685	10.871	7.683	6.119	6.070	35.172	12.101
14	15.057	11.961	8.502	7.030	6.974	37.334	13.309
15	15.759	12.518	8.923	7.510	7.451	38.390	13.927
19	18.628	14.798	10.662	9.570	9.495	42.376	16.453
20	19.351	15.373	11.105	10.113	10.033	43.297	17.089
22	20.791	16.516	11.989	11.217	11.129	45.026	18.356
23	21.503	17.082	12.428	11.774	11.682	45.828	18.982
24	22.205	17.640	12.863	12.332	12.236	46.584	19.600
25	22.897	18.190	13.292	12.888	12.788	47.291	20.208
26	23.576	18.729	13.714	13.440	13.335	47.948	20.805
27	24.239	19.256	14.127	13.984	13.875	48.550	21.387
28	24.883	19.768	14.529	14.518	14.406	49.096	21.953

Pollutant Name: Diesel - mi/gal   Temperature: 48F   Relative Humidity: 40%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
3	29.156	29.156	19.486	4.447	4.056	0.000	7.246
5	29.156	29.156	19.486	4.447	4.056	0.000	7.246
6	29.156	29.156	19.486	4.504	4.056	0.000	7.291
7	29.156	29.156	19.486	4.563	4.056	0.000	7.338
8	29.156	29.156	19.486	4.625	4.056	0.000	7.387
9	29.156	29.156	19.486	4.690	4.056	0.000	7.439
10	29.156	29.156	19.486	4.758	4.056	0.000	7.493
11	29.156	29.156	19.486	4.829	4.056	0.000	7.549
12	29.156	29.156	19.486	4.903	4.056	0.000	7.608
14	29.156	29.156	19.486	5.060	4.056	0.000	7.733
15	29.156	29.156	19.486	5.144	4.056	0.000	7.799
19	29.156	29.156	19.486	5.514	4.056	0.000	8.093
20	29.156	29.156	19.486	5.549	4.056	0.000	8.121
22	29.156	29.156	19.486	5.620	4.056	0.000	8.177
23	29.156	29.156	19.486	5.655	4.056	0.000	8.205
24	29.156	29.156	19.486	5.690	4.056	0.000	8.233
25	29.156	29.156	19.486	5.724	4.056	0.000	8.261
26	29.156	29.156	19.486	5.759	4.056	0.000	8.288
27	29.156	29.156	19.486	5.793	4.056	0.000	8.315
28	29.156	29.156	19.486	5.826	4.056	0.000	8.342

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****

Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Total Organic Gases   Temperature: 48F   Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.036	0.021	0.063	0.092	0.219	1.308	0.053
10	0.071	0.041	0.125	0.179	0.427	1.574	0.094
20	0.135	0.079	0.243	0.339	0.810	2.090	0.170
30	0.193	0.115	0.355	0.480	1.148	2.583	0.239
40	0.245	0.148	0.459	0.603	1.441	3.053	0.303
50	0.290	0.179	0.556	0.707	1.690	3.501	0.361
60	0.328	0.208	0.646	0.793	1.895	3.822	0.411
120	0.432	0.321	0.949	0.621	1.483	3.495	0.536
180	0.242	0.185	0.680	0.658	1.573	2.764	0.353
240	0.256	0.197	0.723	0.695	1.661	2.941	0.374
300	0.269	0.208	0.765	0.731	1.746	3.114	0.395
360	0.283	0.220	0.807	0.765	1.828	3.284	0.416
420	0.296	0.231	0.849	0.798	1.907	3.451	0.436
480	0.308	0.242	0.890	0.830	1.983	3.614	0.456
540	0.321	0.253	0.931	0.861	2.056	3.774	0.476
600	0.333	0.264	0.971	0.890	2.127	3.931	0.495
660	0.344	0.275	1.011	0.918	2.194	4.084	0.514
720	0.356	0.286	1.051	0.945	2.259	4.234	0.533

Pollutant Name: Carbon Monoxide   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.409	0.333	0.966	1.763	2.299	4.044	0.594
10	0.805	0.658	1.908	3.455	4.504	5.671	1.144
20	1.554	1.283	3.720	6.623	8.635	8.744	2.192
30	2.248	1.875	5.434	9.505	12.392	11.577	3.170
40	2.887	2.434	7.051	12.100	15.775	14.168	4.079
50	3.470	2.960	8.571	14.409	18.785	16.519	4.919
60	3.997	3.452	9.994	16.431	21.421	18.629	5.689
120	5.808	5.300	14.173	9.474	12.352	23.325	7.554
180	3.055	2.950	7.629	9.751	12.713	12.700	4.288
240	3.228	3.195	8.258	10.037	13.086	13.929	4.583
300	3.388	3.412	8.815	10.333	13.471	15.056	4.849
360	3.534	3.600	9.299	10.637	13.868	16.080	5.087
420	3.666	3.760	9.712	10.950	14.277	17.002	5.297

480	3.785	3.892	10.052	11.273	14.697	17.822	5.478
540	3.891	3.996	10.320	11.605	15.130	18.539	5.630
600	3.983	4.071	10.516	11.946	15.574	19.154	5.754
660	4.062	4.118	10.640	12.296	16.030	19.667	5.849
720	4.127	4.138	10.691	12.655	16.499	20.078	5.916

Pollutant Name: Oxides of Nitrogen   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.063	0.120	0.725	0.248	0.698	0.180	0.211
10	0.075	0.127	0.772	0.374	1.052	0.225	0.234
20	0.096	0.141	0.857	0.595	1.674	0.306	0.275
30	0.113	0.153	0.930	0.775	2.180	0.372	0.309
40	0.126	0.163	0.990	0.914	2.572	0.424	0.337
50	0.136	0.171	1.038	1.013	2.848	0.462	0.357
60	0.142	0.177	1.073	1.070	3.009	0.487	0.371
120	0.148	0.192	1.167	1.096	3.082	0.496	0.397
180	0.161	0.208	1.190	1.092	3.071	0.496	0.412
240	0.160	0.207	1.181	1.086	3.053	0.488	0.409
300	0.158	0.204	1.167	1.078	3.030	0.478	0.405
360	0.156	0.201	1.147	1.067	3.001	0.467	0.398
420	0.154	0.196	1.121	1.055	2.966	0.453	0.390
480	0.151	0.191	1.090	1.040	2.924	0.437	0.381
540	0.147	0.184	1.053	1.023	2.877	0.418	0.369
600	0.143	0.177	1.011	1.004	2.824	0.398	0.356
660	0.138	0.168	0.963	0.983	2.765	0.376	0.341
720	0.133	0.159	0.910	0.960	2.700	0.352	0.325

Pollutant Name: Carbon Dioxide   Temperature: 48F   Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.023	15.321	21.593	2.785	2.887	13.275	14.332
10	13.597	17.228	24.487	5.555	5.758	15.472	16.312
20	17.230	21.670	31.143	11.049	11.452	19.787	20.837
30	21.511	26.946	38.956	16.480	17.082	23.994	26.117
40	26.440	33.055	47.928	21.850	22.649	28.093	32.151
50	32.017	39.999	58.057	27.159	28.151	32.086	38.941
60	38.242	47.778	69.344	32.406	33.590	35.971	46.484
120	88.279	111.089	159.522	55.117	57.130	53.421	106.172
180	100.309	126.127	181.331	65.116	67.495	57.658	120.709
240	112.297	141.133	203.046	74.526	77.248	61.645	135.169
300	124.241	156.109	224.669	83.345	86.389	65.384	149.552
360	136.144	171.055	246.199	91.574	94.919	68.874	163.858
420	148.003	185.969	267.636	99.212	102.837	72.115	178.088
480	159.820	200.852	288.980	106.261	110.143	75.108	192.240
540	171.594	215.705	310.231	112.719	116.837	77.853	206.316
600	183.326	230.527	331.389	118.588	122.919	80.348	220.315
660	195.015	245.318	352.455	123.866	128.390	82.595	234.237
720	206.661	260.078	373.427	128.553	133.249	84.594	248.083

Pollutant Name: Sulfur Dioxide   Temperature: 48F   Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.001	0.000
50	0.000	0.000	0.001	0.000	0.001	0.001	0.000
60	0.000	0.001	0.001	0.001	0.001	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.001	0.001	0.002
540	0.002	0.002	0.003	0.001	0.001	0.001	0.002
600	0.002	0.002	0.003	0.001	0.001	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.002	0.001	0.002

Pollutant Name: PM10   Temperature: 48F   Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.000	0.007	0.001
10	0.001	0.002	0.002	0.001	0.001	0.006	0.002
20	0.002	0.005	0.004	0.001	0.002	0.005	0.003
30	0.003	0.007	0.006	0.002	0.003	0.004	0.005
40	0.004	0.009	0.008	0.003	0.003	0.003	0.006
50	0.005	0.011	0.010	0.003	0.004	0.003	0.008
60	0.006	0.013	0.011	0.004	0.005	0.003	0.009
120	0.010	0.022	0.018	0.005	0.006	0.006	0.015
180	0.011	0.024	0.020	0.005	0.006	0.008	0.017
240	0.013	0.026	0.022	0.005	0.007	0.011	0.018
300	0.013	0.028	0.024	0.005	0.007	0.013	0.019
360	0.014	0.030	0.025	0.006	0.007	0.014	0.021
420	0.015	0.032	0.027	0.006	0.007	0.016	0.022
480	0.015	0.033	0.027	0.006	0.007	0.017	0.022
540	0.016	0.033	0.028	0.006	0.008	0.018	0.023
600	0.016	0.034	0.029	0.006	0.008	0.019	0.023
660	0.016	0.034	0.029	0.007	0.008	0.019	0.024
720	0.016	0.034	0.029	0.007	0.008	0.019	0.024

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.021	0.037	0.028	0.003	0.015	0.065	0.027
10	0.039	0.069	0.052	0.005	0.028	0.120	0.050
20	0.067	0.117	0.088	0.009	0.048	0.205	0.085
30	0.086	0.150	0.113	0.011	0.061	0.264	0.108
40	0.093	0.162	0.122	0.012	0.066	0.286	0.117

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.005	0.012	0.012	0.000	0.000	0.011	0.008

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.000	0.001	0.001	0.000	0.000	0.001	0.001

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.004	0.009	0.009	0.000	0.000	0.009	0.007

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Total Organic Gases   Temperature: ALL   Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
48	0.000	0.001	0.001	0.000	0.000	0.001	0.000

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL   Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.487	0.336	0.127	0.038	0.001	0.009	1.000
%TRIP	0.458	0.300	0.183	0.048	0.000	0.011	1.000
%VEH	0.492	0.328	0.118	0.026	0.000	0.037	1.000

Title   : San Diego County 2030
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2009/05/07 10:19:36
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season   : Annual
Area   : San Diego
****
Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego County Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Total Organic Gases   Temperature: 48F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.225	0.235	0.067	0.292	0.004	0.112
2	0.007	0.115	0.120	0.034	0.147	0.036	0.059
3	0.008	0.081	0.085	0.024	0.100	0.053	0.043
4	0.009	0.065	0.068	0.019	0.077	0.063	0.037
5	0.010	0.056	0.059	0.016	0.063	0.069	0.033
10	0.013	0.038	0.040	0.011	0.037	0.082	0.025
15	0.013	0.033	0.035	0.009	0.029	0.085	0.023
20	0.014	0.031	0.033	0.009	0.027	0.087	0.022
25	0.014	0.030	0.032	0.008	0.025	0.088	0.022
30	0.014	0.030	0.032	0.008	0.025	0.087	0.022
35	0.014	0.030	0.032	0.008	0.025	0.086	0.022
40	0.013	0.030	0.032	0.008	0.025	0.086	0.022
45	0.013	0.030	0.031	0.008	0.025	0.085	0.022
50	0.013	0.029	0.031	0.008	0.025	0.085	0.022
55	0.013	0.029	0.031	0.008	0.025	0.084	0.021
60	0.013	0.029	0.031	0.008	0.024	0.084	0.021

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	11. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	10. M	AMB=	5.3 PPM		
SIGTH=	5. DEGREES	TEMP=	8.9 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	1873	9.4	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	880	4.8	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	750	8.9	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	1619	6.1	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1181	4.8	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1057	7.5	.0	20.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F
1. Rcpt_1	45.	8.9	2.0	.0	.0	1.5	.0	.0
2. Rcpt_2	69.	8.3	2.1	.0	.0	.8	.0	.0
3. Rcpt_3	65.	9.8	3.2	.3	.0	1.0	.0	.0
4. Rcpt_4	47.	9.8	2.4	.0	.3	1.7	.0	.2

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 11. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 10. M	AMB= 5.3 PPM	
SIGTH= 5. DEGREES	TEMP= 8.9 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	1230	7.8	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	680	4.8	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	800	9.4	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	1694	6.1	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	962	4.5	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1306	8.5	.0	20.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F
1. Rcpt_1	245.	8.1	.0	.0	.4	.0	.5	1.9
2. Rcpt_2	190.	7.9	.4	.1	1.5	.2	.0	.3
3. Rcpt_3	66.	8.3	1.7	.2	.0	1.2	.0	.0
4. Rcpt_4	48.	8.9	1.2	.0	.3	1.9	.0	.2

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

    JOB: C:\Work\Projects\Roadway Projects\I-5 SR
    RUN: CALINE4 RUN      (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
    U=    .5 M/S          Z0= 100. CM          ALT=    18. (M)
  BRG= WORST CASE         VD=    .0 CM/S
 CLAS=     7 (G)          VS=    .0 CM/S
 MIXH=   10. M           AMB=   5.3 PPM
SIGTH=    5. DEGREES    TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*	*****	*****	*****	*****	*	AG	519	4.5	.0	13.0
B. CCreekNBApp	*	*****	*****	*****	*****	*	AG	911	7.5	.0	20.0
C. CCreekSBDep	*	*****	*****	*****	*****	*	AG	398	4.4	.0	20.0
D. CCreekSBApp	*	*****	*****	*****	*****	*	AG	804	7.2	.0	24.0
E. Link_1	*	*****	*****	*****	*****	*	AG	641	4.5	.0	14.0
F. Link_2	*	*****	*****	*****	*****	*	AG	641	4.5	.0	14.0
G. Link_3	*	*****	*****	*****	*****	*	AG	641	4.5	.0	14.0
H. Link_4	*	*****	*****	*****	*****	*	AG	641	4.5	.0	14.0
I. VCenterEBApp	*	*****	*****	*****	*****	*	AG	237	6.7	.0	18.0
J. VCenterWBDep	*	*****	*****	*****	*****	*	AG	975	7.5	.0	13.0
K. Link_7	*	*****	*****	*****	*****	*	AG	581	7.8	.0	20.0
L. Link_8	*	*****	*****	*****	*****	*	AG	581	7.8	.0	20.0
M. Link_9	*	*****	*****	*****	*****	*	AG	581	7.8	.0	60.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Rcpt_1	*	478545	******	1.8
2. Rcpt_2	*	478506	******	1.8
3. Rcpt_3	*	478524	******	1.8
4. Rcpt_4	*	478559	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	244.	7.3	.1	.0	.0	.2	.0	.0	.0	.0
2. Rcpt_2	139.	6.8	.0	.7	.2	.1	.0	.0	.0	.0
3. Rcpt_3	340.	6.8	.0	.0	.0	1.0	.0	.0	.0	.0
4. Rcpt_4	258.	7.2	.0	.3	.0	.0	.1	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.1	1.5	.0	.0	.0
2. Rcpt_2	.0	.4	.0	.0	.0
3. Rcpt_3	.0	.3	.0	.0	.0
4. Rcpt_4	.2	1.2	.0	.0	.0

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
         JUNE 1989 VERSION
         PAGE   1

    JOB: C:\Work\Projects\Roadway Projects\I-5 SR
    RUN: CALINE4 RUN      (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
     U=    .5 M/S            Z0= 100. CM           ALT=    18. (M)
   BRG= WORST CASE           VD=    .0 CM/S
  CLAS=     7 (G)            VS=    .0 CM/S
  MIXH=   10. M             AMB=   5.3 PPM
 SIGTH=    5. DEGREES      TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*****	*****	*****	*****	AG	638	4.5	.0	13.0
B. CCreekNBApp	*****	*****	*****	*****	AG	994	7.2	.0	20.0
C. CCreekSBDep	*****	*****	*****	*****	AG	459	4.4	.0	20.0
D. CCreekSBApp	*****	*****	*****	*****	AG	824	7.2	.0	24.0
E. Link_1	*****	*****	*****	*****	AG	738	4.5	.0	14.0
F. Link_2	*****	*****	*****	*****	AG	738	4.5	.0	14.0
G. Link_3	*****	*****	*****	*****	AG	738	4.5	.0	14.0
H. Link_4	*****	*****	*****	*****	AG	738	4.5	.0	14.0
I. VCenterEBApp	*****	*****	*****	*****	AG	303	6.7	.0	18.0
J. VCenterWBDep	*****	*****	*****	*****	AG	582	4.8	.0	13.0
K. Link_7	*****	*****	*****	*****	AG	296	7.0	.0	20.0
L. Link_8	*****	*****	*****	*****	AG	296	7.0	.0	20.0
M. Link_9	*****	*****	*****	*****	AG	296	7.0	.0	60.0

(LINK COORDINATES (M) span X1, Y1, X2, Y2.)

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	478545	******	1.8
2. Rcpt_2	478506	******	1.8
3. Rcpt_3	478524	******	1.8
4. Rcpt_4	478559	******	1.8

(COORDINATES (M) span X, Y, Z.)

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	6.9	.0	1.3	.0	.0	.1	.0	.0	.0
2. Rcpt_2	139.	6.6	.0	.7	.2	.1	.0	.0	.0	.0
3. Rcpt_3	341.	6.7	.1	.0	.0	1.0	.0	.0	.0	.0
4. Rcpt_4	320.	6.5	.4	.0	.0	.6	.2	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.2	.0	.0	.0
3. Rcpt_3	.1	.1	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   1

                JOB: C:\Work\Projects\Roadway Projects\I-5 SR
                RUN: CALINE4 RUN      (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=    .5 M/S              Z0= 100. CM            ALT=    38. (M)
      BRG= WORST CASE             VD=   .0 CM/S
     CLAS=     7 (G)              VS=   .0 CM/S
     MIXH=   10. M               AMB=  5.3 PPM
    SIGTH=    5. DEGREES        TEMP=  8.9 DEGREE (C)


 II.  LINK VARIABLES

      LINK      *  LINK COORDINATES (M)    *               EF     H     W
   DESCRIPTION  *   X1    Y1    X2    Y2   * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*------------------------------
A. CCountrySBAp * ***** ***** ***** ***** *  AG    895   7.5      .0  18.0
B. Link_1       * ***** ***** ***** ***** *  AG   1097   7.8      .0  18.0
C. Link_2       * ***** ***** ***** ***** *  AG   1097   7.8      .0  18.0
D. Link_3       * ***** ***** ***** ***** *  AG   1097   7.8      .0  18.0
E. Link_4       * ***** ***** ***** ***** *  AG    546   4.8      .0  20.0
F. Link_5       * ***** ***** ***** ***** *  AG    546   4.8      .0  20.0
G. Link_6       * ***** ***** ***** ***** *  AG    581   4.8      .0  13.0
H. Link_7       * ***** ***** ***** ***** *  AG   1126   4.8      .0  10.0
I. Link_8       * ***** ***** ***** ***** *  AG   1126   4.8      .0  10.0
J. Link_9       * ***** ***** ***** ***** *  AG   1126   4.8      .0  10.0
K. Link_10      * ***** ***** ***** ***** *  AG   1126   4.8      .0  10.0
L. Link_11      * ***** ***** ***** ***** *  AG   1126   4.8      .0  10.0
M. Link_12      * ***** ***** ***** ***** *  AG   1126   4.8      .0  10.0
N. Link_13      * ***** ***** ***** ***** *  AG    261   6.7      .0  16.0
O. Link_14      * ***** ***** ***** ***** *  AG    261   6.7      .0  16.0
P. Link_15      * ***** ***** ***** ***** *  AG    261   6.7      .0  16.0


III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X       Y      Z
------------*---------------------
1. Rcpt_1   * 479884 ******   1.8
2. Rcpt_2   * 479916 ******   1.8
3. Rcpt_3   * 479896 ******   1.8
4. Rcpt_4   * 479866 ******   1.8
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	7.7	.0	.6	.9	.4	.0	.1	.1	.1
2. Rcpt_2	140.	7.1	.0	.6	1.1	.0	.0	.1	.0	.0
3. Rcpt_3	303.	6.9	1.3	.0	.0	.0	.1	.0	.2	.0
4. Rcpt_4	300.	6.9	1.5	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0	.0	.0	.0

```
            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   1

                JOB: C:\Work\Projects\Roadway Projects\I-5 SR
                RUN: CALINE4 RUN      (WORST CASE ANGLE)
          POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
       U=    .5 M/S              Z0= 100. CM            ALT=    38. (M)
     BRG= WORST CASE             VD=   .0 CM/S
    CLAS=     7 (G)              VS=   .0 CM/S
    MIXH=   10. M               AMB=  5.3 PPM
   SIGTH=    5. DEGREES        TEMP=  8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCountrySBAp	*	*****	*****	*****	*****	*	AG	770	7.2	.0	18.0
B. Link_1	*	*****	*****	*****	*****	*	AG	1149	7.8	.0	18.0
C. Link_2	*	*****	*****	*****	*****	*	AG	1149	7.8	.0	18.0
D. Link_3	*	*****	*****	*****	*****	*	AG	1149	7.8	.0	18.0
E. Link_4	*	*****	*****	*****	*****	*	AG	471	4.8	.0	20.0
F. Link_5	*	*****	*****	*****	*****	*	AG	471	4.8	.0	20.0
G. CCountryNBDe	*	*****	*****	*****	*****	*	AG	1011	4.9	.0	13.0
H. Link_7	*	*****	*****	*****	*****	*	AG	632	4.5	.0	10.0
I. Link_8	*	*****	*****	*****	*****	*	AG	632	4.5	.0	10.0
J. Link_9	*	*****	*****	*****	*****	*	AG	632	4.5	.0	10.0
K. Link_10	*	*****	*****	*****	*****	*	AG	632	4.5	.0	10.0
L. Link_11	*	*****	*****	*****	*****	*	AG	632	4.5	.0	10.0
M. Link_12	*	*****	*****	*****	*****	*	AG	632	4.5	.0	10.0
N. Link_13	*	*****	*****	*****	*****	*	AG	195	6.7	.0	16.0
O. Link_14	*	*****	*****	*****	*****	*	AG	195	6.7	.0	16.0
P. Link_15	*	*****	*****	*****	*****	*	AG	195	6.7	.0	16.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Rcpt_1	*	479884	******	1.8
2. Rcpt_2	*	479916	******	1.8
3. Rcpt_3	*	479896	******	1.8
4. Rcpt_4	*	479866	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
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JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	7.8	.0	.6	1.0	.4	.0	.0	.2	.0
2. Rcpt_2	287.	7.3	.6	.0	.0	.3	.0	.0	.9	.2
3. Rcpt_3	305.	6.8	1.0	.0	.0	.0	.1	.0	.5	.0
4. Rcpt_4	118.	6.7	.3	.5	.3	.0	.3	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 11. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 10. M	AMB= 5.3 PPM	
SIGTH= 5. DEGREES	TEMP= 8.9 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	2313	4.9	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1203	2.9	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	1050	4.2	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	2030	4.4	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1420	3.4	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1290	4.5	.0	20.0

(Link coordinates in M)

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

(Coordinates (M))

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F
1. Rcpt_1	46.	8.0	1.2	.0	.0	1.4	.0	.0
2. Rcpt_2	70.	7.4	1.3	.0	.0	.8	.0	.0
3. Rcpt_3	65.	8.5	2.0	.2	.0	.9	.0	.0
4. Rcpt_4	48.	8.7	1.4	.0	.2	1.6	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 11. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 10. M	AMB= 5.3 PPM	
SIGTH= 5. DEGREES	TEMP= 8.9 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	1548	4.9	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1008	2.9	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	1180	4.2	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	2177	4.4	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1160	2.7	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1617	4.9	.0	20.0

LINK COORDINATES (M)

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

COORDINATES (M)

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F
1. Rcpt_1	46.	7.7	.8	.0	.0	1.5	.0	.0
2. Rcpt_2	190.	7.2	.3	.1	1.0	.2	.0	.2
3. Rcpt_3	66.	7.9	1.3	.2	.0	1.1	.0	.0
4. Rcpt_4	48.	8.4	1.0	.0	.2	1.7	.0	.2

CONC/LINK (PPM)

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: C:\Work\Projects\Roadway Projects\I-5 SR
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
       U=    .5 M/S            Z0= 100. CM           ALT=    18. (M)
     BRG= WORST CASE           VD=    .0 CM/S
    CLAS=     7 (G)            VS=    .0 CM/S
    MIXH=   10. M             AMB=   5.3 PPM
   SIGTH=    5. DEGREES      TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*	*****	*****	*****	*****	*	AG	624	2.6	.0	13.0
B. CCreekNBApp	*	*****	*****	*****	*****	*	AG	1070	4.2	.0	20.0
C. CCreekSBDep	*	*****	*****	*****	*****	*	AG	483	2.6	.0	20.0
D. CCreekSBApp	*	*****	*****	*****	*****	*	AG	963	4.1	.0	24.0
E. Link_1	*	*****	*****	*****	*****	*	AG	750	2.6	.0	14.0
F. Link_2	*	*****	*****	*****	*****	*	AG	750	2.6	.0	14.0
G. Link_3	*	*****	*****	*****	*****	*	AG	750	2.6	.0	14.0
H. Link_4	*	*****	*****	*****	*****	*	AG	750	2.6	.0	14.0
I. VCenterEBApp	*	*****	*****	*****	*****	*	AG	270	3.7	.0	18.0
J. VCenterWBDep	*	*****	*****	*****	*****	*	AG	1120	3.0	.0	13.0
K. Link_7	*	*****	*****	*****	*****	*	AG	898	1.9	.0	20.0
L. Link_8	*	*****	*****	*****	*****	*	AG	898	1.9	.0	20.0
M. Link_9	*	*****	*****	*****	*****	*	AG	898	1.9	.0	60.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Rcpt_1	*	478545	******	1.8
2. Rcpt_2	*	478506	******	1.8
3. Rcpt_3	*	478524	******	1.8
4. Rcpt_4	*	478559	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	6.3	.0	.8	.0	.0	.0	.0	.0	.0
2. Rcpt_2	139.	6.2	.0	.5	.2	.0	.0	.0	.0	.0
3. Rcpt_3	340.	6.2	.0	.0	.0	.7	.0	.0	.0	.0
4. Rcpt_4	257.	6.3	.0	.2	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.2	.0	.0	.0
3. Rcpt_3	.0	.1	.0	.0	.0
4. Rcpt_4	.1	.5	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 18. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 10. M	AMB= 5.3 PPM	
SIGTH= 5. DEGREES	TEMP= 8.9 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*****	*****	*****	*****	AG	945	2.6	.0	13.0
B. CCreekNBApp	*****	*****	*****	*****	AG	1170	4.2	.0	20.0
C. CCreekSBDep	*****	*****	*****	*****	AG	560	2.6	.0	20.0
D. CCreekSBApp	*****	*****	*****	*****	AG	1130	4.2	.0	24.0
E. Link_1	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
F. Link_2	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
G. Link_3	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
H. Link_4	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
I. VCenterEBApp	*****	*****	*****	*****	AG	460	3.8	.0	18.0
J. VCenterWBDep	*****	*****	*****	*****	AG	720	2.6	.0	13.0
K. Link_7	*****	*****	*****	*****	AG	459	1.7	.0	20.0
L. Link_8	*****	*****	*****	*****	AG	459	1.7	.0	20.0
M. Link_9	*****	*****	*****	*****	AG	459	1.7	.0	60.0

LINK COORDINATES (M): X1, Y1, X2, Y2

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	478545	******	1.8
2. Rcpt_2	478506	******	1.8
3. Rcpt_3	478524	******	1.8
4. Rcpt_4	478559	******	1.8

COORDINATES (M): X, Y, Z

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	6.3	.0	.9	.0	.0	.0	.0	.0	.0
2. Rcpt_2	139.	6.2	.0	.5	.2	.0	.0	.0	.0	.0
3. Rcpt_3	341.	6.4	.1	.0	.0	.8	.0	.0	.0	.0
4. Rcpt_4	321.	6.2	.3	.0	.0	.4	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.1	.0	.0	.0
3. Rcpt_3	.1	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0

```
                CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                         JUNE 1989 VERSION
                         PAGE   1

                    JOB: C:\Work\Projects\Roadway Projects\I-5 SR
                    RUN: CALINE4 RUN      (WORST CASE ANGLE)
              POLLUTANT: Carbon Monoxide


      I.  SITE VARIABLES

              U=    .5 M/S              Z0= 100. CM            ALT=    38. (M)
            BRG= WORST CASE             VD=   .0 CM/S
           CLAS=     7 (G)              VS=   .0 CM/S
           MIXH=   10. M               AMB=  5.3 PPM
          SIGTH=    5. DEGREES        TEMP=  8.9 DEGREE (C)


     II.  LINK VARIABLES

         LINK       *  LINK COORDINATES (M)   *               EF     H     W
      DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
   -----------------*-------------------------*-------------------------------
   A. CCountrySBAp  * ***** ***** ***** ***** *  AG   1171   4.2     .0  18.0
   B. Link_1        * ***** ***** ***** ***** *  AG   1440   4.9     .0  18.0
   C. Link_2        * ***** ***** ***** ***** *  AG   1440   4.9     .0  18.0
   D. Link_3        * ***** ***** ***** ***** *  AG   1440   4.9     .0  18.0
   E. Link_4        * ***** ***** ***** ***** *  AG    761   2.6     .0  20.0
   F. Link_5        * ***** ***** ***** ***** *  AG    761   2.6     .0  20.0
   G. CCountryNBDe  * ***** ***** ***** ***** *  AG    859   2.6     .0  13.0
   H. Link_7        * ***** ***** ***** ***** *  AG   1700   1.9     .0  10.0
   I. Link_8        * ***** ***** ***** ***** *  AG   1700   1.9     .0  10.0
   J. Link_9        * ***** ***** ***** ***** *  AG   1700   1.9     .0  10.0
   K. Link_10       * ***** ***** ***** ***** *  AG   1700   1.9     .0  10.0
   L. Link_11       * ***** ***** ***** ***** *  AG   1700   1.9     .0  10.0
   M. Link_12       * ***** ***** ***** ***** *  AG   1700   1.9     .0  10.0
   N. Link_13       * ***** ***** ***** ***** *  AG    606   1.8     .0  16.0
   O. Link_14       * ***** ***** ***** ***** *  AG    606   1.8     .0  16.0
   P. Link_15       * ***** ***** ***** ***** *  AG    606   1.8     .0  16.0


   III.  RECEPTOR LOCATIONS

               *    COORDINATES (M)
     RECEPTOR  *    X       Y      Z
   ------------*---------------------
   1. Rcpt_1   * 479884 ******   1.8
   2. Rcpt_2   * 479916 ******   1.8
   3. Rcpt_3   * 479896 ******   1.8
   4. Rcpt_4   * 479866 ******   1.8
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	7.2	.0	.5	.8	.3	.0	.0	.0	.0
2. Rcpt_2	140.	6.8	.0	.5	.9	.0	.0	.0	.0	.0
3. Rcpt_3	303.	6.5	1.0	.0	.0	.0	.0	.0	.1	.0
4. Rcpt_4	301.	6.5	1.1	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	38. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	10. M	AMB=	5.3 PPM		
SIGTH=	5. DEGREES	TEMP=	8.9 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCountrySBAp	*****	*****	*****	*****	AG	1092	4.2	.0	18.0
B. Link_1	*****	*****	*****	*****	AG	1400	4.5	.0	18.0
C. Link_2	*****	*****	*****	*****	AG	1400	4.5	.0	18.0
D. Link_3	*****	*****	*****	*****	AG	1400	4.5	.0	18.0
E. Link_4	*****	*****	*****	*****	AG	742	2.6	.0	20.0
F. Link_5	*****	*****	*****	*****	AG	742	2.6	.0	20.0
G. CCountryNBDe	*****	*****	*****	*****	AG	1351	3.0	.0	13.0
H. Link_7	*****	*****	*****	*****	AG	740	2.7	.0	10.0
I. Link_8	*****	*****	*****	*****	AG	740	2.7	.0	10.0
J. Link_9	*****	*****	*****	*****	AG	740	2.7	.0	10.0
K. Link_10	*****	*****	*****	*****	AG	740	2.7	.0	10.0
L. Link_11	*****	*****	*****	*****	AG	740	2.7	.0	10.0
M. Link_12	*****	*****	*****	*****	AG	740	2.7	.0	10.0
N. Link_13	*****	*****	*****	*****	AG	341	3.8	.0	16.0
O. Link_14	*****	*****	*****	*****	AG	341	3.8	.0	16.0
P. Link_15	*****	*****	*****	*****	AG	341	3.8	.0	16.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	479884	******	1.8
2. Rcpt_2	479916	******	1.8
3. Rcpt_3	479896	******	1.8
4. Rcpt_4	479866	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	7.1	.0	.5	.7	.3	.0	.0	.2	.0
2. Rcpt_2	287.	6.9	.5	.0	.0	.2	.0	.0	.8	.1
3. Rcpt_3	304.	6.6	.9	.0	.0	.0	.0	.0	.3	.0
4. Rcpt_4	304.	6.5	.9	.0	.0	.0	.0	.0	.3	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	11. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	10. M	AMB=	5.3 PPM		
SIGTH=	5. DEGREES	TEMP=	8.9 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	2313	4.9	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1203	2.9	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	1755	4.9	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	2735	4.4	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1420	3.4	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1290	4.5	.0	20.0

(X1, Y1, X2, Y2: LINK COORDINATES (M))

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

(COORDINATES (M))

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F
1. Rcpt_1	46.	8.5	1.2	.0	.0	1.9	.0	.0
2. Rcpt_2	190.	8.1	.5	.1	1.7	.3	.0	.2
3. Rcpt_3	66.	8.8	2.0	.2	.0	1.4	.0	.0
4. Rcpt_4	48.	9.4	1.4	.0	.4	2.1	.0	.1

(A–F: CONC/LINK (PPM))

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: C:\Work\Projects\Roadway Projects\I-5 SR
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
       U=    .5 M/S            Z0= 100. CM           ALT=    11. (M)
     BRG= WORST CASE           VD=    .0 CM/S
    CLAS=     7 (G)            VS=    .0 CM/S
    MIXH=   10. M             AMB=   5.3 PPM
   SIGTH=    5. DEGREES      TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	1548	4.9	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1008	2.9	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	2005	4.9	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	3002	4.4	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1160	2.7	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1617	4.9	.0	20.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F
1. Rcpt_1	47.	8.3	.8	.0	.0	2.2	.0	.0
2. Rcpt_2	190.	8.2	.3	.1	1.9	.3	.0	.2
3. Rcpt_3	67.	8.3	1.2	.2	.0	1.6	.0	.0
4. Rcpt_4	49.	9.2	.9	.0	.4	2.5	.0	.2

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            CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                     JUNE 1989 VERSION
                     PAGE   1

                JOB: C:\Work\Projects\Roadway Projects\I-5 SR
                RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=    .5 M/S              Z0= 100. CM           ALT=    18. (M)
      BRG= WORST CASE             VD=    .0 CM/S
     CLAS=     7 (G)              VS=    .0 CM/S
     MIXH=   10. M               AMB=   5.3 PPM
    SIGTH=    5. DEGREES        TEMP=   8.9 DEGREE (C)


  II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)   *                EF     H     W
   DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
-----------------*-------------------------*-------------------------------
A. CCreekNBDep   * ***** ***** ***** ***** *  AG    718   2.6     .0  13.0
B. CCreekNBApp   * ***** ***** ***** ***** *  AG   1070   4.2     .0  20.0
C. CCreekSBDep   * ***** ***** ***** ***** *  AG    530   2.6     .0  20.0
D. CCreekSBApp   * ***** ***** ***** ***** *  AG    963   4.1     .0  24.0
E. Link_1        * ***** ***** ***** ***** *  AG    750   2.6     .0  14.0
F. Link_2        * ***** ***** ***** ***** *  AG    750   2.6     .0  14.0
G. Link_3        * ***** ***** ***** ***** *  AG    750   2.6     .0  14.0
H. Link_4        * ***** ***** ***** ***** *  AG    750   2.6     .0  14.0
I. VCenterEBApp  * ***** ***** ***** ***** *  AG    270   3.7     .0  18.0
J. VCenterWBDep  * ***** ***** ***** ***** *  AG   1120   3.0     .0  13.0
K. Link_7        * ***** ***** ***** ***** *  AG    815   3.9     .0  20.0
L. Link_8        * ***** ***** ***** ***** *  AG    815   3.9     .0  20.0
M. Link_9        * ***** ***** ***** ***** *  AG    815   3.9     .0  60.0


III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X       Y      Z
------------*---------------------
1. Rcpt_1   * 478545 ******   1.8
2. Rcpt_2   * 478506 ******   1.8
3. Rcpt_3   * 478524 ******   1.8
4. Rcpt_4   * 478559 ******   1.8
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	6.3	.0	.8	.0	.0	.0	.0	.0	.0
2. Rcpt_2	139.	6.2	.0	.5	.2	.0	.0	.0	.0	.0
3. Rcpt_3	341.	6.3	.0	.0	.0	.6	.0	.0	.0	.0
4. Rcpt_4	257.	6.3	.0	.2	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.2	.0	.0	.0
3. Rcpt_3	.0	.1	.0	.0	.0
4. Rcpt_4	.1	.5	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

```
      U=    .5 M/S             Z0= 100. CM            ALT=    18. (M)
    BRG= WORST CASE            VD=    .0 CM/S
   CLAS=     7 (G)             VS=    .0 CM/S
   MIXH=   10. M              AMB=   5.3 PPM
  SIGTH=    5. DEGREES       TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*	*****	*****	*****	*****	*	AG	1055	2.7	.0	13.0
B. CCreekNBApp	*	*****	*****	*****	*****	*	AG	1170	4.2	.0	20.0
C. CCreekSBDep	*	*****	*****	*****	*****	*	AG	615	2.6	.0	20.0
D. CCreekSBApp	*	*****	*****	*****	*****	*	AG	1130	4.2	.0	24.0
E. Link_1	*	*****	*****	*****	*****	*	AG	890	2.6	.0	14.0
F. Link_2	*	*****	*****	*****	*****	*	AG	890	2.6	.0	14.0
G. Link_3	*	*****	*****	*****	*****	*	AG	890	2.6	.0	14.0
H. Link_4	*	*****	*****	*****	*****	*	AG	890	2.6	.0	14.0
I. VCenterEBApp	*	*****	*****	*****	*****	*	AG	460	3.8	.0	18.0
J. VCenterWBDep	*	*****	*****	*****	*****	*	AG	720	2.6	.0	13.0
K. Link_7	*	*****	*****	*****	*****	*	AG	520	3.8	.0	20.0
L. Link_8	*	*****	*****	*****	*****	*	AG	520	3.8	.0	20.0
M. Link_9	*	*****	*****	*****	*****	*	AG	520	3.8	.0	60.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Rcpt_1	*	478545	******	1.8
2. Rcpt_2	*	478506	******	1.8
3. Rcpt_3	*	478524	******	1.8
4. Rcpt_4	*	478559	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	6.4	.0	.9	.0	.0	.0	.0	.0	.0
2. Rcpt_2	139.	6.3	.0	.5	.2	.0	.0	.0	.0	.0
3. Rcpt_3	343.	6.4	.2	.0	.0	.7	.0	.0	.0	.0
4. Rcpt_4	321.	6.3	.4	.0	.0	.4	.1	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.1	.0	.0	.0
3. Rcpt_3	.1	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

```
      U=    .5 M/S              Z0= 100. CM            ALT=    38. (M)
    BRG= WORST CASE             VD=    .0 CM/S
   CLAS=     7 (G)              VS=    .0 CM/S
   MIXH=   10. M               AMB=   5.3 PPM
  SIGTH=    5. DEGREES        TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCountrySBAp	*****	*****	*****	*****	AG	1171	4.2	.0	18.0
B. Link_1	*****	*****	*****	*****	AG	1675	4.9	.0	18.0
C. Link_2	*****	*****	*****	*****	AG	1675	4.9	.0	18.0
D. Link_3	*****	*****	*****	*****	AG	1675	4.9	.0	18.0
E. Link_4	*****	*****	*****	*****	AG	761	2.6	.0	20.0
F. Link_5	*****	*****	*****	*****	AG	761	2.6	.0	20.0
G. CCountryNBDe	*****	*****	*****	*****	AG	953	2.6	.0	13.0
H. Link_7	*****	*****	*****	*****	AG	1621	3.5	.0	10.0
I. Link_8	*****	*****	*****	*****	AG	1621	3.5	.0	10.0
J. Link_9	*****	*****	*****	*****	AG	1621	3.5	.0	10.0
K. Link_10	*****	*****	*****	*****	AG	1621	3.5	.0	10.0
L. Link_11	*****	*****	*****	*****	AG	1621	3.5	.0	10.0
M. Link_12	*****	*****	*****	*****	AG	1621	3.5	.0	10.0
N. Link_13	*****	*****	*****	*****	AG	489	3.8	.0	16.0
O. Link_14	*****	*****	*****	*****	AG	489	3.8	.0	16.0
P. Link_15	*****	*****	*****	*****	AG	489	3.8	.0	16.0

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	479884	******	1.8
2. Rcpt_2	479916	******	1.8
3. Rcpt_3	479896	******	1.8
4. Rcpt_4	479866	******	1.8

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   2

              JOB: C:\Work\Projects\Roadway Projects\I-5 SR
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	132.	7.6	.0	.6	.9	.3	.0	.0	.0	.2
2. Rcpt_2	140.	7.0	.0	.6	1.0	.0	.0	.0	.0	.0
3. Rcpt_3	28.	6.4	.0	.0	.0	.3	.0	.0	.0	.4
4. Rcpt_4	60.	6.7	.3	.0	.0	.0	.0	.0	.1	.2

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.1
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.2	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.4	.2	.0	.0	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

```
    U=    .5 M/S              Z0= 100. CM            ALT=    38. (M)
  BRG= WORST CASE             VD=    .0 CM/S
 CLAS=     7 (G)              VS=    .0 CM/S
 MIXH=   10. M               AMB=   5.3 PPM
SIGTH=    5. DEGREES        TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCountrySBAp	*****	*****	*****	*****	AG	1092	4.2	.0	18.0
B. Link_1	*****	*****	*****	*****	AG	1675	4.9	.0	18.0
C. Link_2	*****	*****	*****	*****	AG	1675	4.9	.0	18.0
D. Link_3	*****	*****	*****	*****	AG	1675	4.9	.0	18.0
E. Link_4	*****	*****	*****	*****	AG	742	2.6	.0	20.0
F. Link_5	*****	*****	*****	*****	AG	742	2.6	.0	20.0
G. CCountryNBDe	*****	*****	*****	*****	AG	1461	3.4	.0	13.0
H. Link_7	*****	*****	*****	*****	AG	905	2.8	.0	10.0
I. Link_8	*****	*****	*****	*****	AG	905	2.8	.0	10.0
J. Link_9	*****	*****	*****	*****	AG	905	2.8	.0	10.0
K. Link_10	*****	*****	*****	*****	AG	905	2.8	.0	10.0
L. Link_11	*****	*****	*****	*****	AG	905	2.8	.0	10.0
M. Link_12	*****	*****	*****	*****	AG	905	2.8	.0	10.0
N. Link_13	*****	*****	*****	*****	AG	341	3.8	.0	16.0
O. Link_14	*****	*****	*****	*****	AG	341	3.8	.0	16.0
P. Link_15	*****	*****	*****	*****	AG	341	3.8	.0	16.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	479884	******	1.8
2. Rcpt_2	479916	******	1.8
3. Rcpt_3	479896	******	1.8
4. Rcpt_4	479866	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	7.6	.0	.6	.9	.3	.0	.0	.2	.0
2. Rcpt_2	287.	7.2	.5	.0	.0	.2	.0	.0	.9	.2
3. Rcpt_3	306.	6.6	.7	.0	.0	.0	.0	.0	.5	.0
4. Rcpt_4	118.	6.5	.2	.5	.3	.0	.2	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	11. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	10. M	AMB=	5.3 PPM		
SIGTH=	5. DEGREES	TEMP=	8.9 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	2614	2.2	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1348	1.5	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	1150	1.9	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	2388	1.9	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1636	1.6	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1608	2.2	.0	20.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F
1. Rcpt_1	46.	6.7	.6	.0	.0	.7	.0	.0
2. Rcpt_2	70.	6.4	.7	.0	.0	.4	.0	.0
3. Rcpt_3	65.	6.9	1.0	.1	.0	.5	.0	.0
4. Rcpt_4	48.	7.0	.7	.0	.0	.8	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

```
     U=    .5 M/S              Z0= 100. CM            ALT=    11. (M)
   BRG= WORST CASE             VD=   .0 CM/S
  CLAS=     7 (G)              VS=   .0 CM/S
  MIXH=   10. M               AMB=  5.3 PPM
 SIGTH=    5. DEGREES        TEMP=  8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	1716	2.2	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1156	1.4	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	1300	2.1	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	2628	1.9	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1240	1.4	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	2008	2.2	.0	20.0

(LINK COORDINATES (M): X1, Y1, X2, Y2)

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

(COORDINATES (M))

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F
1. Rcpt_1	46.	6.5	.4	.0	.0	.8	.0	.0
2. Rcpt_2	190.	6.3	.2	.0	.6	.1	.0	.1
3. Rcpt_3	66.	6.6	.6	.1	.0	.6	.0	.0
4. Rcpt_4	48.	6.9	.5	.0	.1	.9	.0	.0

(CONC/LINK (PPM): A–F)

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 18. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 10. M	AMB= 5.3 PPM	
SIGTH= 5. DEGREES	TEMP= 8.9 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*****	*****	*****	*****	AG	727	1.4	.0	13.0
B. CCreekNBApp	*****	*****	*****	*****	AG	1284	2.1	.0	20.0
C. CCreekSBDep	*****	*****	*****	*****	AG	617	1.4	.0	20.0
D. CCreekSBApp	*****	*****	*****	*****	AG	1152	1.9	.0	24.0
E. Link_1	*****	*****	*****	*****	AG	961	1.3	.0	14.0
F. Link_2	*****	*****	*****	*****	AG	961	1.3	.0	14.0
G. Link_3	*****	*****	*****	*****	AG	961	1.3	.0	14.0
H. Link_4	*****	*****	*****	*****	AG	961	1.3	.0	14.0
I. VCenterEBApp	*****	*****	*****	*****	AG	356	1.7	.0	18.0
J. VCenterWBDep	*****	*****	*****	*****	AG	1385	1.5	.0	13.0
K. Link_7	*****	*****	*****	*****	AG	898	1.9	.0	20.0
L. Link_8	*****	*****	*****	*****	AG	898	1.9	.0	20.0
M. Link_9	*****	*****	*****	*****	AG	898	1.9	.0	60.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	478545	******	1.8
2. Rcpt_2	478506	******	1.8
3. Rcpt_3	478524	******	1.8
4. Rcpt_4	478559	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	5.9	.0	.5	.0	.0	.0	.0	.0	.0
2. Rcpt_2	139.	5.9	.0	.3	.1	.0	.0	.0	.0	.0
3. Rcpt_3	340.	5.9	.0	.0	.0	.4	.0	.0	.0	.0
4. Rcpt_4	257.	5.9	.0	.1	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.1	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.3	.0	.0	.0

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          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

               JOB: C:\Work\Projects\Roadway Projects\I-5 SR
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
       U=    .5 M/S              Z0= 100. CM             ALT=    18. (M)
     BRG= WORST CASE             VD=    .0 CM/S
    CLAS=     7 (G)              VS=    .0 CM/S
    MIXH=   10. M               AMB=   5.3 PPM
   SIGTH=    5. DEGREES        TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*****	*****	*****	*****	AG	1180	1.4	.0	13.0
B. CCreekNBApp	*****	*****	*****	*****	AG	1496	2.2	.0	20.0
C. CCreekSBDep	*****	*****	*****	*****	AG	708	1.4	.0	20.0
D. CCreekSBApp	*****	*****	*****	*****	AG	1420	2.1	.0	24.0
E. Link_1	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
F. Link_2	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
G. Link_3	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
H. Link_4	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
I. VCenterEBApp	*****	*****	*****	*****	AG	563	1.8	.0	18.0
J. VCenterWBDep	*****	*****	*****	*****	AG	943	1.3	.0	13.0
K. Link_7	*****	*****	*****	*****	AG	459	1.7	.0	20.0
L. Link_8	*****	*****	*****	*****	AG	459	1.7	.0	20.0
M. Link_9	*****	*****	*****	*****	AG	459	1.7	.0	60.0

LINK COORDINATES (M): X1, Y1, X2, Y2

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	478545	******	1.8
2. Rcpt_2	478506	******	1.8
3. Rcpt_3	478524	******	1.8
4. Rcpt_4	478559	******	1.8

COORDINATES (M): X, Y, Z

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	6.0	.0	.6	.0	.0	.0	.0	.0	.0
2. Rcpt_2	139.	5.9	.0	.3	.1	.0	.0	.0	.0	.0
3. Rcpt_3	341.	6.0	.0	.0	.0	.5	.0	.0	.0	.0
4. Rcpt_4	321.	5.9	.2	.0	.0	.3	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: C:\Work\Projects\Roadway Projects\I-5 SR
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=    .5 M/S              Z0= 100. CM            ALT=    38. (M)
      BRG= WORST CASE             VD=   .0 CM/S
     CLAS=     7 (G)              VS=   .0 CM/S
     MIXH=   10. M               AMB=  5.3 PPM
    SIGTH=    5. DEGREES        TEMP=  8.9 DEGREE (C)


  II.  LINK VARIABLES

       LINK      *  LINK COORDINATES (M)    *                EF     H     W
    DESCRIPTION  *   X1     Y1     X2     Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*--------------------------*------------------------------
 A. CCountrySBAp * ***** ***** ***** ***** *  AG   1386   2.1      .0  18.0
 B. Link_1       * ***** ***** ***** ***** *  AG   1680   2.2      .0  18.0
 C. Link_2       * ***** ***** ***** ***** *  AG   1680   2.2      .0  18.0
 D. Link_3       * ***** ***** ***** ***** *  AG   1680   2.2      .0  18.0
 E. Link_4       * ***** ***** ***** ***** *  AG    856   1.4      .0  20.0
 F. Link_5       * ***** ***** ***** ***** *  AG    856   1.4      .0  20.0
 G. CCountryNBDe * ***** ***** ***** ***** *  AG   1116   1.4      .0  13.0
 H. Link_7       * ***** ***** ***** ***** *  AG   1700   1.9      .0  10.0
 I. Link_8       * ***** ***** ***** ***** *  AG   1700   1.9      .0  10.0
 J. Link_9       * ***** ***** ***** ***** *  AG   1700   1.9      .0  10.0
 K. Link_10      * ***** ***** ***** ***** *  AG   1700   1.9      .0  10.0
 L. Link_11      * ***** ***** ***** ***** *  AG   1700   1.9      .0  10.0
 M. Link_12      * ***** ***** ***** ***** *  AG   1700   1.9      .0  10.0
 N. Link_13      * ***** ***** ***** ***** *  AG    606   1.8      .0  16.0
 O. Link_14      * ***** ***** ***** ***** *  AG    606   1.8      .0  16.0
 P. Link_15      * ***** ***** ***** ***** *  AG    606   1.8      .0  16.0


 III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *    X       Y      Z
 ------------*---------------------
 1. Rcpt_1   * 479884 ******   1.8
 2. Rcpt_2   * 479916 ******   1.8
 3. Rcpt_3   * 479896 ******   1.8
 4. Rcpt_4   * 479866 ******   1.8
```

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	6.4	.0	.3	.4	.2	.0	.0	.0	.0
2. Rcpt_2	286.	6.3	.3	.0	.0	.1	.0	.0	.3	.2
3. Rcpt_3	304.	6.0	.5	.0	.0	.0	.0	.0	.1	.0
4. Rcpt_4	60.	6.1	.2	.0	.0	.0	.0	.0	.0	.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.2	.1	.0	.0	.0	.0	.0	.0

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: C:\Work\Projects\Roadway Projects\I-5 SR
              RUN: CALINE4 RUN      (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
       U=    .5 M/S             Z0= 100. CM            ALT=    38. (M)
     BRG= WORST CASE            VD=   .0 CM/S
    CLAS=     7 (G)             VS=   .0 CM/S
    MIXH=   10. M              AMB=  5.3 PPM
   SIGTH=    5. DEGREES       TEMP=  8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK COORDINATES (M) X1	Y1	X2	Y2	*	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCountrySBAp	*	*****	*****	*****	*****	*	AG	1226	1.9	.0	18.0
B. Link_1	*	*****	*****	*****	*****	*	AG	1630	2.2	.0	18.0
C. Link_2	*	*****	*****	*****	*****	*	AG	1630	2.2	.0	18.0
D. Link_3	*	*****	*****	*****	*****	*	AG	1630	2.2	.0	18.0
E. Link_4	*	*****	*****	*****	*****	*	AG	856	1.4	.0	20.0
F. Link_5	*	*****	*****	*****	*****	*	AG	856	1.4	.0	20.0
G. CCountryNBDe	*	*****	*****	*****	*****	*	AG	1517	1.6	.0	13.0
H. Link_7	*	*****	*****	*****	*****	*	AG	950	1.3	.0	10.0
I. Link_8	*	*****	*****	*****	*****	*	AG	950	1.3	.0	10.0
J. Link_9	*	*****	*****	*****	*****	*	AG	950	1.3	.0	10.0
K. Link_10	*	*****	*****	*****	*****	*	AG	950	1.3	.0	10.0
L. Link_11	*	*****	*****	*****	*****	*	AG	950	1.3	.0	10.0
M. Link_12	*	*****	*****	*****	*****	*	AG	950	1.3	.0	10.0
N. Link_13	*	*****	*****	*****	*****	*	AG	437	1.7	.0	16.0
O. Link_14	*	*****	*****	*****	*****	*	AG	437	1.7	.0	16.0
P. Link_15	*	*****	*****	*****	*****	*	AG	437	1.7	.0	16.0

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Rcpt_1	*	479884	******	1.8
2. Rcpt_2	*	479916	******	1.8
3. Rcpt_3	*	479896	******	1.8
4. Rcpt_4	*	479866	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	6.3	.0	.3	.4	.1	.0	.0	.0	.0
2. Rcpt_2	287.	6.2	.3	.0	.0	.1	.0	.0	.5	.0
3. Rcpt_3	306.	6.0	.4	.0	.0	.0	.0	.0	.3	.0
4. Rcpt_4	119.	5.9	.1	.2	.1	.0	.1	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

```
     U=    .5 M/S             Z0= 100. CM             ALT=    11. (M)
   BRG= WORST CASE            VD=    .0 CM/S
  CLAS=     7 (G)             VS=    .0 CM/S
  MIXH=   10. M              AMB=   5.3 PPM
 SIGTH=    5. DEGREES       TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CValleyEBApp	*****	*****	*****	*****	AG	2614	2.2	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1348	1.5	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	2090	2.2	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	3328	1.9	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1636	1.6	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	1608	2.2	.0	20.0

(LINK COORDINATES (M): X1, Y1, X2, Y2)

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

(COORDINATES (M))

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F
1. Rcpt_1	46.	7.0	.6	.0	.0	1.0	.0	.0
2. Rcpt_2	190.	6.8	.2	.0	.9	.1	.0	.0
3. Rcpt_3	66.	7.1	1.0	.1	.0	.7	.0	.0
4. Rcpt_4	48.	7.4	.7	.0	.2	1.1	.0	.0

(CONC/LINK (PPM): A–F)

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 11. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 10. M	AMB= 5.3 PPM	
SIGTH= 5. DEGREES	TEMP= 8.9 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
	LINK COORDINATES (M)								
A. CValleyEBApp	*****	*****	*****	*****	AG	1716	2.2	.0	20.0
B. I5NBDep	*****	*****	*****	*****	AG	1156	1.4	.0	15.0
C. I5NBApp	*****	*****	*****	*****	AG	2363	2.2	.0	20.0
D. CValleyEBDep	*****	*****	*****	*****	AG	3691	1.9	.0	20.0
E. CValleyWBDep	*****	*****	*****	*****	AG	1240	1.4	.0	20.0
F. CValleyWBApp	*****	*****	*****	*****	AG	2008	2.2	.0	20.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	477541	******	1.8
2. Rcpt_2	477535	******	1.8
3. Rcpt_3	477518	******	1.8
4. Rcpt_4	477526	******	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F
1. Rcpt_1	47.	6.9	.4	.0	.0	1.2	.0	.0
2. Rcpt_2	190.	6.8	.2	.0	1.0	.2	.0	.1
3. Rcpt_3	67.	6.9	.6	.1	.0	.8	.0	.0
4. Rcpt_4	49.	7.4	.4	.0	.2	1.3	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= .5 M/S	Z0= 100. CM	ALT= 18. (M)
BRG= WORST CASE	VD= .0 CM/S	
CLAS= 7 (G)	VS= .0 CM/S	
MIXH= 10. M	AMB= 5.3 PPM	
SIGTH= 5. DEGREES	TEMP= 8.9 DEGREE (C)	

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*****	*****	*****	*****	AG	718	1.3	.0	13.0
B. CCreekNBApp	*****	*****	*****	*****	AG	1050	1.9	.0	20.0
C. CCreekSBDep	*****	*****	*****	*****	AG	680	1.3	.0	20.0
D. CCreekSBApp	*****	*****	*****	*****	AG	1152	1.9	.0	24.0
E. Link_1	*****	*****	*****	*****	AG	961	1.3	.0	14.0
F. Link_2	*****	*****	*****	*****	AG	961	1.3	.0	14.0
G. Link_3	*****	*****	*****	*****	AG	961	1.3	.0	14.0
H. Link_4	*****	*****	*****	*****	AG	961	1.3	.0	14.0
I. VCenterEBApp	*****	*****	*****	*****	AG	356	1.7	.0	18.0
J. VCenterWBDep	*****	*****	*****	*****	AG	1285	1.5	.0	13.0
K. Link_7	*****	*****	*****	*****	AG	1086	1.9	.0	20.0
L. Link_8	*****	*****	*****	*****	AG	1086	1.9	.0	20.0
M. Link_9	*****	*****	*****	*****	AG	1086	1.9	.0	60.0

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	478545	******	1.8
2. Rcpt_2	478506	******	1.8
3. Rcpt_3	478524	******	1.8
4. Rcpt_4	478559	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	161.	5.8	.0	.4	.0	.0	.0	.0	.0	.0
2. Rcpt_2	80.	5.8	.0	.0	.0	.1	.0	.0	.0	.0
3. Rcpt_3	340.	5.8	.0	.0	.0	.4	.0	.0	.0	.0
4. Rcpt_4	257.	5.9	.0	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.3	.0	.0	.0

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: C:\Work\Projects\Roadway Projects\I-5 SR
               RUN: CALINE4 RUN      (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide
```

I. SITE VARIABLES

```
      U=    .5 M/S              Z0= 100. CM            ALT=    18. (M)
    BRG= WORST CASE             VD=    .0 CM/S
   CLAS=     7 (G)              VS=    .0 CM/S
   MIXH=   10. M               AMB=   5.3 PPM
  SIGTH=    5. DEGREES        TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCreekNBDep	*****	*****	*****	*****	AG	1084	1.3	.0	13.0
B. CCreekNBApp	*****	*****	*****	*****	AG	1168	1.9	.0	20.0
C. CCreekSBDep	*****	*****	*****	*****	AG	779	1.4	.0	20.0
D. CCreekSBApp	*****	*****	*****	*****	AG	1420	2.1	.0	24.0
E. Link_1	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
F. Link_2	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
G. Link_3	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
H. Link_4	*****	*****	*****	*****	AG	1107	1.4	.0	14.0
I. VCenterEBApp	*****	*****	*****	*****	AG	563	1.8	.0	18.0
J. VCenterWBDep	*****	*****	*****	*****	AG	853	1.3	.0	13.0
K. Link_7	*****	*****	*****	*****	AG	459	1.7	.0	20.0
L. Link_8	*****	*****	*****	*****	AG	459	1.7	.0	20.0
M. Link_9	*****	*****	*****	*****	AG	459	1.7	.0	60.0

III. RECEPTOR LOCATIONS

RECEPTOR	X	Y	Z
1. Rcpt_1	478545	******	1.8
2. Rcpt_2	478506	******	1.8
3. Rcpt_3	478524	******	1.8
4. Rcpt_4	478559	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
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JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	162.	5.8	.0	.4	.0	.0	.0	.0	.0	.0
2. Rcpt_2	140.	5.8	.0	.2	.1	.0	.0	.0	.0	.0
3. Rcpt_3	341.	6.0	.0	.0	.0	.5	.0	.0	.0	.0
4. Rcpt_4	321.	5.9	.2	.0	.0	.3	.0	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M
1. Rcpt_1	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

```
      U=    .5 M/S            Z0= 100. CM           ALT=    38. (M)
    BRG= WORST CASE           VD=    .0 CM/S
   CLAS=     7 (G)            VS=    .0 CM/S
   MIXH=   10. M             AMB=   5.3 PPM
  SIGTH=    5. DEGREES      TEMP=   8.9 DEGREE (C)
```

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCountrySBAp	*****	*****	*****	*****	AG	1386	2.1	.0	18.0
B. Link_1	*****	*****	*****	*****	AG	1993	2.2	.0	18.0
C. Link_2	*****	*****	*****	*****	AG	1993	2.2	.0	18.0
D. Link_3	*****	*****	*****	*****	AG	1993	2.2	.0	18.0
E. Link_4	*****	*****	*****	*****	AG	856	1.4	.0	20.0
F. Link_5	*****	*****	*****	*****	AG	856	1.4	.0	20.0
G. CCountryNBDe	*****	*****	*****	*****	AG	1241	1.4	.0	13.0
H. Link_7	*****	*****	*****	*****	AG	1888	1.9	.0	10.0
I. Link_8	*****	*****	*****	*****	AG	1888	1.9	.0	10.0
J. Link_9	*****	*****	*****	*****	AG	1888	1.9	.0	10.0
K. Link_10	*****	*****	*****	*****	AG	1888	1.9	.0	10.0
L. Link_11	*****	*****	*****	*****	AG	1888	1.9	.0	10.0
M. Link_12	*****	*****	*****	*****	AG	1888	1.9	.0	10.0
N. Link_13	*****	*****	*****	*****	AG	606	1.8	.0	16.0
O. Link_14	*****	*****	*****	*****	AG	606	1.8	.0	16.0
P. Link_15	*****	*****	*****	*****	AG	606	1.8	.0	16.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	479884	******	1.8
2. Rcpt_2	479916	******	1.8
3. Rcpt_3	479896	******	1.8
4. Rcpt_4	479866	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
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JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	132.	6.6	.0	.3	.5	.2	.0	.0	.0	.1
2. Rcpt_2	286.	6.3	.3	.0	.0	.1	.0	.0	.3	.2
3. Rcpt_3	28.	6.0	.0	.0	.0	.2	.0	.0	.0	.3
4. Rcpt_4	60.	6.2	.2	.0	.0	.0	.0	.0	.0	.1

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.1	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.2	.1	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	.5 M/S	Z0=	100. CM	ALT=	38. (M)
BRG=	WORST CASE	VD=	.0 CM/S		
CLAS=	7 (G)	VS=	.0 CM/S		
MIXH=	10. M	AMB=	5.3 PPM		
SIGTH=	5. DEGREES	TEMP=	8.9 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. CCountrySBAp	*****	*****	*****	*****	AG	1226	1.9	.0	18.0
B. Link_1	*****	*****	*****	*****	AG	1985	2.2	.0	18.0
C. Link_2	*****	*****	*****	*****	AG	1985	2.2	.0	18.0
D. Link_3	*****	*****	*****	*****	AG	1985	2.2	.0	18.0
E. Link_4	*****	*****	*****	*****	AG	856	1.4	.0	20.0
F. Link_5	*****	*****	*****	*****	AG	856	1.4	.0	20.0
G. CCountryNBDe	*****	*****	*****	*****	AG	1659	1.6	.0	13.0
H. Link_7	*****	*****	*****	*****	AG	1163	1.4	.0	10.0
I. Link_8	*****	*****	*****	*****	AG	1163	1.4	.0	10.0
J. Link_9	*****	*****	*****	*****	AG	1163	1.4	.0	10.0
K. Link_10	*****	*****	*****	*****	AG	1163	1.4	.0	10.0
L. Link_11	*****	*****	*****	*****	AG	1163	1.4	.0	10.0
M. Link_12	*****	*****	*****	*****	AG	1163	1.4	.0	10.0
N. Link_13	*****	*****	*****	*****	AG	437	1.7	.0	16.0
O. Link_14	*****	*****	*****	*****	AG	437	1.7	.0	16.0
P. Link_15	*****	*****	*****	*****	AG	437	1.7	.0	16.0

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Rcpt_1	479884	******	1.8
2. Rcpt_2	479916	******	1.8
3. Rcpt_3	479896	******	1.8
4. Rcpt_4	479866	******	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: C:\Work\Projects\Roadway Projects\I-5 SR
RUN: CALINE4 RUN (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Rcpt_1	133.	6.5	.0	.3	.5	.2	.0	.0	.1	.0
2. Rcpt_2	287.	6.3	.3	.0	.0	.1	.0	.0	.5	.0
3. Rcpt_3	306.	6.0	.4	.0	.0	.0	.0	.0	.3	.0
4. Rcpt_4	119.	6.0	.1	.3	.1	.0	.1	.0	.0	.0

RECEPTOR	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Rcpt_1	.0	.0	.0	.0	.0	.0	.0	.0
2. Rcpt_2	.0	.0	.0	.0	.0	.0	.0	.0
3. Rcpt_3	.0	.0	.0	.0	.0	.0	.0	.0
4. Rcpt_4	.0	.0	.0	.0	.0	.0	.0	.0